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Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management

Third Spanish National Report

October 2008

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Table of Contents

Section A

Introduction

Section A. Introduction

A.1. PRESENTATION OF REPORT

The present document constitutes the Third Spanish National Report, submitted in compliance with the requirements of article 32 of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, done in Vienna on September 5th 1997.

This report will be examined during the review meeting of the Contracting Parties contemplated in article 30 of this Convention, which will begin on May 11th 2009. The Ministry of Industry, Tourism and Trade (MITYC), the Nuclear Safety Council (CSN) and the Spanish radioactive waste management agency Empresa Nacional de Residuos Radiactivos, S.A. (ENRESA) have participated in preparing the report. The report summarises the actions implemented, mainly from January 1st 2005 to June 1st 2008, although the information and data contained therein refer to those available as of December 31st 2007, unless expressly specified otherwise.

The aim is for this report to be not only an explanatory document but also critical and appraising. In this respect, the criteria and directives used in drawing up the report have been as follows:

- ✓ As a starting point, the report has been drawn up taking into account the IAEA document INFCIRC/604 "Guidelines regarding the form and structure of national reports", adopted by the Contracting Parties pursuant to article 29 of the Convention.
- ✓ Repetitions of the contents of the Second National Report have been avoided to the extent possible and emphasis has been placed on the progress made or novelties arising since that previous report including the data and explanations required to justify compliance or otherwise with each article.
- ✓ Consideration has been given to the comments and suggestions emerging during the process of reviewing the previous National Report:
  - ➪ Submittal to the Commissions of Industry, Tourism and Trade of the Congress and Senate and to the Institutions concerned of the reports by the Reporters to the Plenary and the summary report of the second Review Meeting.
  - ➪ Progress in the preparation of proposals for legislative developments relating to waste and spent fuel management with a view to completing the framework in force.
  - ➪ Completion of arrangements for approval by the Government of the new General Radioactive Waste Plan.

- ➪ Progress in the process of selecting a site for a temporary spent fuel and high level radioactive waste storage facility, taking into account the directives issued by the Congress to the Government.

✓ At the end of the section corresponding to each article there is an assessment of compliance by Spain with the requirements established therein, and Section K generally identifies those aspects that it is considered should be improved, along with the measures that it is planned will be adopted for this purpose.

The terminology of the Convention has been used throughout this report, except in those sections in which the corresponding clarifications have been expressly indicated[1].

It should be pointed out that in the Spanish legislation, and throughout this report, what the Convention refers to generically as "nuclear facilities" corresponds not only to those installations that are known as "nuclear facilities" in national law – i.e., nuclear power plants, nuclear reactors, nuclear fuel manufacturing facilities, installations for the treatment of nuclear substances and installations for the storage of nuclear substances – but includes also, for reasons of safety in radioactive waste management, those "radioactive facilities" that produce, handle or store radioactive material.

A.2. National system for spent fuel and radioactive waste management in Spain

Spain possesses the infrastructure required for the management of spent fuel and radioactive waste, from the institutional, administrative, technical and economic-financial points of view, and has also established appropriate measures to respond to society's rights to access to information and participation.

From the administrative point of view, the legal and regulatory framework for the management of spent fuel and wastes is integrated in the general framework regulating nuclear energy in Spain, this being a far-reaching framework developed in accordance with the evolution of international regulatory requirements. This framework clearly establishes the responsibilities of the different parties involved, as well as the distribution of functions among the competent authorities responsible for each area, functions that although exercised separately and independently, are integrated in a coordinated fashion within a common administrative framework.

Firstly, and as specifically regards spent fuel and radioactive waste management, the Government is responsible for defining the national policy by approving the General Radioactive Waste Plan (GRWP), in keeping with a proposal by the Ministry of Industry, Tourism and Trade. This Plan, which is periodically revised, contemplates the main courses of action, the timeframe for implementation and the economic and financial estimates for such implementation.

The basic procedures of the framework regulating nuclear energy, which establish the distribution of administrative functions among the different competent authorities, are as follows:

✓ Authorisation procedure.

The Ministry of Industry, Tourism and Trade (MITYC) is responsible for issuing authorisations for nuclear and radioactive facilities, except in the case of 2nd and

[1] *In the Spanish version of the National Report and for the purposes of agreement with the Spanish standards, the term "residuo radiactivo" has preferably been used for radioactive waste, as a synonym of the term "desecho radiactivo" in the meaning given to it in article 2 of this Convention.*

3rd category radioactive facilities[2] when competence has been transferred to the Governments of the Autonomous Communities[3] so requesting. Prior to granting any authorisation for a nuclear or radioactive facility, the MITYC must request reports from all the competent authorities involved. In the specific case of nuclear safety and radiological protection, the report issued by the Nuclear Safety Council, which is mandatory, is binding if rejecting the request and may establish binding limits and conditions if favourable.

The CSN is responsible for the awarding and cancellation of licences and accreditations for the personnel operating nuclear and radioactive facilities, as well as of diplomas for the personnel of radiological protection services or technical units so requiring. The CSN is also responsible for the awarding and cancellation of authorisations for Personal Dosimetry Services, Radiological Protection Services and Radiological Protection Technical Units.

The approval of the Environmental Impact Statement for projects so requiring is the responsibility of the Ministry of the Environment and Rural and Marine Environments.

✓ Legislative procedure.

The Government is responsible for approving the legislative development of laws approved by Parliament, the MITYC currently being the ministerial department in charge of arrangements for and the submittal of legislative proposals in the field of nuclear energy. The drawing up of proposals for regulatory developments relating to nuclear energy is appropriately coordinated between the MITYC and the CSN. When proposals refer to matters potentially affecting nuclear safety or radiological protection, the initiative corresponds to the Nuclear Safety Council, which transfers proposals to the MITYC for proceedings with the Government.

The Nuclear Safety Council is empowered to issue its own standards through the approval of Nuclear Safety Council Instructions, which are technical standards relating to nuclear safety and radiological protection integrated in the internal legal regime and binding upon those affected by its scope of application once notified or published in the Official State Gazette. Non-compliance with such instructions is legally typified as an administrative infringement and may be punished under the sanctions regime of the Nuclear Energy Act. The CSN may also issue Complementary Technical Instructions, which are administrative proceedings binding upon those to whom they are addressed and aimed at guaranteeing the maintenance of the safety requirements and conditions of facilities and improved compliance with the requirements established in each authorisation. Finally, the CSN issues Circulars and Guides, these being documents of an informative nature and non-binding recommendations, respectively.

✓ Surveillance and control procedure.

The review and assessment of nuclear safety and radiological protection at nuclear and radioactive facilities and the inspection of such facilities are the sole responsi-

[2] As classified in R.D. 1836/1999, of December 3rd, approving the Regulation on Nuclear and Radioactive Facilities, modified by R.D. 35/2008, of January 18th.

[3] The Spanish State is made up of seventeen Autonomous Communities, whose right to autonomy is contemplated in art. 2 of the Spanish Constitution. The powers and realms of competence of the Autonomous Communities are established in arts. 143 and following articles of the Spanish Constitution.

bility of the CSN, as the only competent organisation in relation to nuclear safety and radiological protection.

As regards other issues, such as security, emergency preparedness or environmental radiological impact, the application of this procedure is carried out in coordination with the organisations of other ministerial departments having competence in each area.

✓ Sanctions proceedings.

The Directorate General for Energy Policy and Mines of the MITYC is responsible for initiating sanctions proceedings against nuclear and radioactive facilities, except 2nd and 3rd category facilities for which competence has been transferred to the Governments of the Autonomous Communities, and for submitting sanctions proposals to the authority determined by the legislation depending on the seriousness of the infringement.

When infringements refer to issues relating to nuclear safety or radiological protection, the initiative corresponds to the CSN which proposes the initiation of the corresponding proceedings to the MITYC. As regards security, the CSN may also propose the initiation of sanctions proceedings for infringements against the legislative framework governing nuclear energy.

In addition, the CSN is legally empowered, under certain circumstances contemplated in the Nuclear Energy Act and alternatively to proposing the initiation of sanctions proceedings to the MITYC, to issue warnings to the licensees, establishing the corrective measures to be implemented by the latter. If the licensee does not respond to the warning, the CSN may impose coercive fines in accordance with the procedure established for this purpose in the legislation.

Section E includes a more detailed description of the legislative and regulatory system.

As regards the technical and economic and financial infrastructure for radioactive waste and spent fuel management, the Empresa Nacional de Residuos Radiactivos, S.A. (ENRESA) is the company authorised in Spain to provide radioactive waste and spent nuclear fuel storage and disposal, transport and handling services. This company, which is entirely public in nature, was set up by Royal Decree in 1984 and has as its shareholders the Centre for Energy-Related, Environmental and Technological Research (CIEMAT), a national research centre reporting to the Ministry of Science and Innovation, and the Spanish industrial holding company Sociedad Española de Participaciones Industriales (SEPI), which reports to the Ministry of Economy and the Exchequer.

In addition to spent fuel and radioactive waste management activities and the dismantling of nuclear facilities, ENRESA's functions include the drawing up of the drafts of the successive general radioactive waste plans, which are submitted to the MITYC for review and proceedings before the Government, and the administrative and financial management of the fund for the financing of activities included in the GRWP, under the supervision of a Fund Tracking Committee and the control of the competent economic-financial authorities of the State Administration (Section E, sub-section 19.5 refers more extensively to ENRESA).

Finally, the waste producers are responsible for the safe operation of their facilities and activities, in all cases in compliance with the requirements of the official documents, for whatever issues might affect the conditions of their authorisations and safety and radiological protection and, in general, for abiding by the regulations in force. Likewise, the producers are responsible for their facilities under whatever emergency situations might arise.

Figure 1 shows the national system for spent fuel and radioactive waste management.

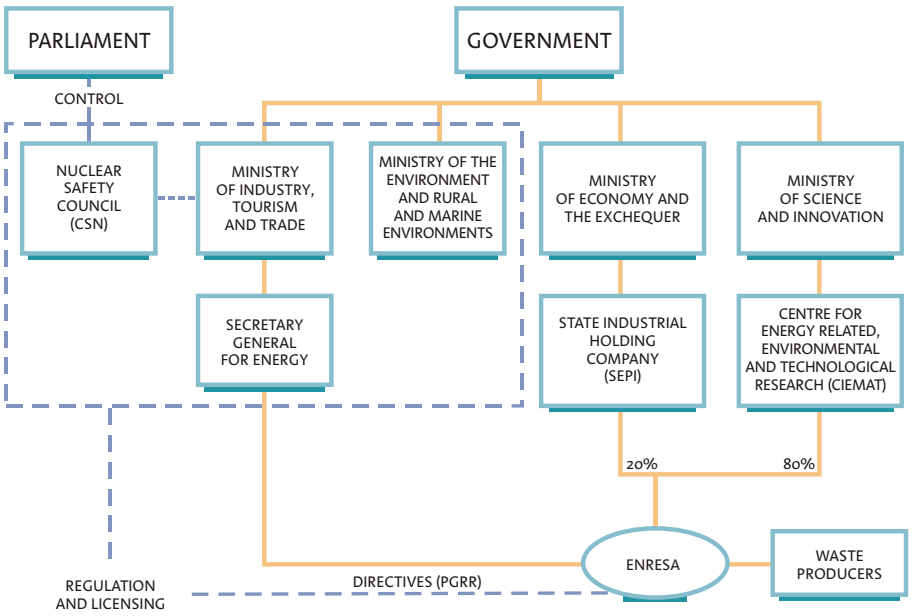

Figure 1. National system.

A.3. Origin of spent fuel and radioactive waste in Spain

The spent fuel managed in Spain comes from the operation of nine nuclear reactors located on seven sites: José Cabrera, Santa María de Garoña, Almaraz I and II, Ascó I and II, Cofrentes, Vandellós II and Trillo. In accordance with the Convention, these plants are also radioactive waste management facilities.

Spain also has other nuclear facilities in operation: the Juzbado fuel manufacturing facility in Salamanca, the CIEMAT nuclear facility in Madrid and the solid radioactive waste disposal centre in Sierra Albarrana ("El Cabril") in the province of Córdoba.

Over the years a considerable corpus of experience has been accumulated in Spain in the field of dismantling and decommissioning, this including the following projects:

- ✓ Dismantling of existing installations and restoration of the site of the Andújar Uranium Mill (AUM);
- ✓ Dismantling and environmental restoration of the uranium ore treatment facilities at La Haba (now completed) and Saelices El Chico, which undertook large-scale uranium ore mining and milling activities;
- ✓ Partial dismantling (IAEA level 2) of the 460 MWe graphite-gas Vandellós I nuclear power plant;
- ✓ Decommissioning of research reactors in the university sector (ARGOS and ARBI).
- ✓ Support in the dismantling of the José Cabrera nuclear power plant.

In addition, radioactive wastes may be generated as a result of the presence of sources and other radioactive materials at installations or in activities not covered by the regulatory system. For such cases Spain has mechanisms that allow actions to be taken to recover the regulatory control of such materials, particularly significant being the agreement between the public administrations and companies potentially affected by such cases, formalised by way of a Protocol signed in 1998.

Figure 2 shows the situation of the nuclear power plants, reactors and facilities, along with the number of installations generating radioactive wastes, which as of May 31st 2008 stood at around eight hundred.

It should also be pointed out that at present there is no project in Spain for the construction of new nuclear power plants.

A.4. Developments in spent fuel and radioactive waste management subsequent to the Second National Report

Section K of the Second National Report presented by Spain dealt with a series of initiatives that were on-going at the time of its publication. The status of development of these initiatives was updated during the presentation of the report at the second review meeting of the Convention, as a result of which it was requested that the Third National Report cover the progress made in le-

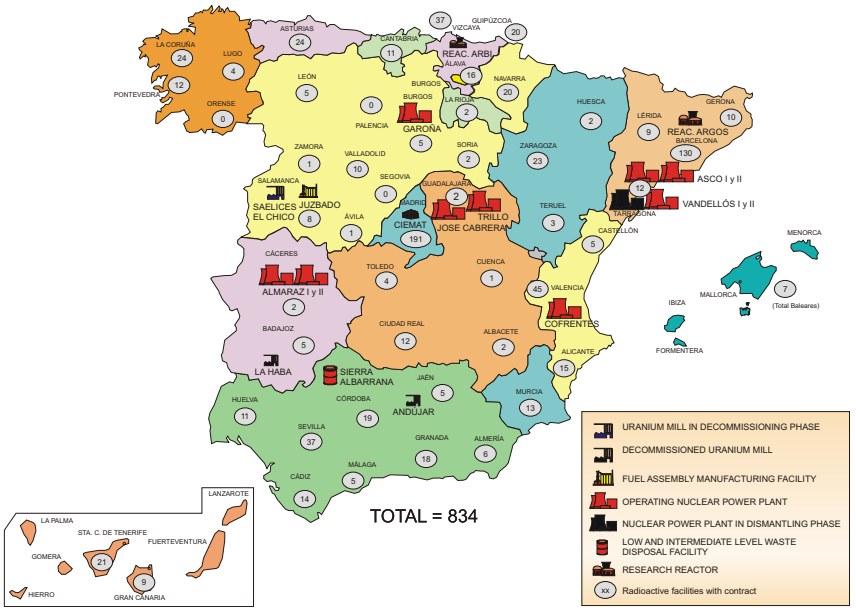

Figure 2. Situation of nuclear power plants, reactors and facilities.

gal developments relating to safety in the management of spent fuel and radioactive waste, the process of assigning candidate sites to house spent fuel and high level waste storage facilities, the specific regulatory framework regulating long-term radiological risk and the safety principles and criteria applicable to definitive disposal facilities for spent fuel and/or radioactive waste and reports on management options contemplating the different alternatives considered at international level.

Although these questions are dealt with in depth in different sections of the present report, the most important examples of progress are underlined below:

a) Legislative developments

It should first be pointed out that during the period of the report there have been important legislative and regulatory changes in the national legal system regulating nuclear energy in general, and spent fuel and radioactive waste management in particular. Although the fundamental provisions of the legal and regulatory framework remain the same, important changes have been introduced, either through provisions of a general nature or through specific reforming provisions.

In particular, certain articles of the Nuclear Energy Act, Law 25/1964, of April 29th, the main legal provision regulating nuclear energy in Spain, have been modified. Especially significant in this respect are the changes affecting the regulation of civil nuclear liability for environmental damage, the general updating of nuclear infringements and sanctions and the appropriate measures to be adopted in all stages of spent nuclear fuel and radioactive waste management, the aim being to adequately protect persons, property and the environment against radiological risks, in the present and the future, and to ensure that waste production be kept as low as possible, in volume and activity, in keeping with the scientific practice existing at each moment.

Law 33/2007, of November 7th, reforming Law 15/1980, of April 22nd, by which the Nuclear Safety Council was set up, modifies the functions and certain aspects affecting the aforementioned regulatory body.

Also worthy of mention are the changes that have occurred in the Electricity Industry Act, Law 54/1997, of November 27th, relating to the financing of the activities of included in the General Radioactive Waste Plan.

As regards regulatory issues, Royal Decree 35/2008, of January 18th, introduces substantial changes in the current Regulation on Nuclear and Radioactive Facilities. In addition, Royal Decree 775/2006, of June 23rd, creates an Interministerial Commission for the establishment of the criteria to be met by the Centralised Temporary Storage (CTS) facility to house spent fuel and high level radioactive waste.

Furthermore, the CSN has approved 12 Instructions since 2005, 3 of which enter the area of this Convention.

Section E, Article 20 includes details of these new legislative developments.

b) Implementation of radioactive waste management plans at nuclear facilities.

The Regulation on Nuclear and Radioactive Facilities (RNRF) establishes that applications for nuclear facility operating permits must include a plan for the management of radioactive waste and spent fuel (PLAGERR), incorporating where appropriate the contracts entered into with management companies and including, among other items, a system for possible waste declassification and a study of dismantling and decommissioning plans, establishing the final disposal foreseen for the wastes generated and including a cost study and the economic and financial arrangements in place to guarantee decommissioning.

In view of analysis of the experience relating to the main novelty aspects included in the radioactive waste management plans (PLAGERR), particularly significant among which are the classification of facilities in radioactive waste and conventional waste production areas and the implementation of a second line of radiological control of all materials exiting the facilities.

In this respect, and as pointed out in the Second Report, the working group set up in 2001 by the CSN and MITYC, in collaboration with ENRESA, continues to work on identifying shortcomings and putting together proposals regarding the specific concepts and aspects identified, as well as on determining the most adequate supporting legal instruments. Mention should be made of the implementation at radioactive waste generating facilities of the corresponding PLAGERR, a document that has been approved for each specific facility and that includes the methodology applied for the radiological control of all materials that are to exit the installation and their management route, as radioactive or conventional wastes.

c) Process of selecting a site for the construction of a Centralised Temporary Storage (CTS) facility

As regards this aspect, during the period of the report the Government has approved a new General Radioactive Waste Plan (GRWP) that updates the strategy for the temporary management of spent fuel (SF) and high level radioactive waste (HLW). This plan identifies the construction of a CTS facility as a key issue, the entry into service of this installation currently being foreseen for around the year 2012.

In compliance with the parliamentary mandate of 2004, urging that CTS be adopted as the temporary strategy for SF and HLW management, and a bill issued in 2006 in relation to the setting up of an Interministerial Commission in charge of establishing the criteria to be met by the CTS site, the Government approved Royal Decree 775/2006, of June 23rd, creating the said Commission.

Since its creation, the Interministerial Commission has drawn up the technical and legal reports required to undertake the process of site selection, keeping public opinion informed as a phase prior to the opening of a public call allowing municipalities interested in hosting this facility, along with its associated technology centre, to submit their candidatures.

Section B

Policies and Practices

Section B. Policies and Practices

This section covers the obligations set out in Article 32 paragraph 1 of the Convention.

> *Article 32. Reporting*
>
> *1. In accordance with the provisions of Article 30, each Contracting Party shall submit anational report to each review meeting of Contracting Parties. This report shall address the measurestaken to implement each of the obligations of the Convention. For each Contracting Party the reportshall also address its:*
>
> *(i) spent fuel management policy;*
>
> *(ii) spent fuel management practices;*
>
> *(iii) radioactive waste management policy;*
>
> *(iv) radioactive waste management practices;*
>
> *(v) criteria used to define and categorize radioactive waste.*

B.1. POLICY AND GENERAL STRATEGY FOR RADIOACTIVE WASTE AND SPENT FUEL MANAGEMENT

B.1.1. GENERAL PRINCIPLES

Spain possesses a significant infrastructure for the management of spent nuclear fuel and radioactive waste, from the administrative, technical and economic-financial point of view. As regards the administrative side, there is an organisation based on a relatively ample and developed legislative framework. From the technical and economic viewpoints, the strategies and actions to be undertaken in the different areas of radioactive waste management are included in the different General Radioactive Waste Plans.

The General Radioactive Waste Plan (GRWP) currently in force, approved during the meeting of the Cabinet on June 23rd 2006, is the sixth and replaces the previous plan approved in July 1999 (5th GRWP). This new Plan contemplates the legislative novelties and technological progress made during the period of validity of the previous plan, the necessary actions, technical solutions and economic-financial forecasts, from now until 2070, being updated in certain cases and modified in others.

B.1.2. General Radioactive Waste Plan (GRWP)

The Government establishes the general lines of the national radioactive waste and spent fuel management policy through the GRWP.

This plan is an official document drawn up by ENRESA and submitted to the Ministry of Industry, Tourism and Trade pursuant to the legislation in force[1]. It is to be submitted by the MITYC to the Government, which first requests comments from the CSN, the Autonomous Communities, industry and social stakeholders, as well as from the general public via its publication on the MITYC website. Following approval by the Government, the plan is communicated to Parliament.

The GRWP is drawn up every four years or whenever so requested by the MITYC, and constitutes the reference framework for national spent fuel and radioactive waste management strategies. As established in the legal standards, it is required to contain the following:

- ✓ Necessary actions and technical solutions foreseen for the management of radioactive waste and the dismantling and decommissioning of nuclear and, where appropriate, radioactive facilities throughout the timeframe of the Plan.
- ✓ Economic and financial forecasts for the performance of these activities.

B.1.3. Contractual relations between ENRESA and the producers

Legal basis and objective of the contract

The producers of radioactive waste are obliged to have special installations for the storage, transport and handling of such waste. The producers are considered to possess such installations when, by contract or any other legally valid instrument, they are entitled to make use of the services of ENRESA, which is the company authorised to store, transport and handle radioactive waste and having installations for this purpose.

In this respect, a contractual relation is established between ENRESA and the waste producers based on type contracts requiring approval by the MITYC and covering two areas:

- ✓ In waste management, ENRESA defines the conditions for the reception of the wastes from the producers and promotes the necessary optimisation actions, while the producers condition the wastes generated in accordance with these instructions and contribute to the optimisation and improvement of the system obtained.
- ✓ In dismantling and decommissioning, ENRESA defines the conditions and the producers participate in the plans for the decommissioning and dismantling of their facilities.

Obligations of the parties

In either of these two cases, the contracts between ENRESA and the producers are governed by the following directives:

[1] *Arts. 2 y 6 del RD 1349/2003, de 31 de octubre, sobre ordenación de las actividades de la Empresa Nacional de Residuos Radiactivos, S.A. (ENRESA), y su financiación. BOE núm. 268 de 8 de noviembre 2003, pp. 39654 y ss.*

1) The term of the contract shall extend to the end of the service lifetime of the facilities, including their dismantling.
2) The economic compensation for the services rendered may be of different types contemplated in the regulations, either prices or percentages established on the final product or billing to the waste producers, as is the case for the use of radioisotopes in industry, medicine, agriculture or research. These prices and tariffs are calculated on the basis of the estimates of the General Radioactive Waste Plan and are transferred to a Fund for the financing of activities included in this Plan.

ENRESA's activities and their financing are governed by Royal Decree 1349/2003, of October 31st. Section F of this report deals with this financing (Article 22.2, entitled "Availability of Financial Resources").

B.2. Classification of radioactive waste

The latest revision of the definition of radioactive waste is included in the Electricity Industry Act, Law 54/1997, of November 27th:

> *Any waste material or product for which no further use is foreseen and which contains or is contaminated with radionuclides in concentrations or levels of activity in excess of those established by the Ministry of Industry and Energy (currently the Ministry of Industry, Tourism and Trade), following a report by the Nuclear Safety Council.*

The classification of radioactive waste in Spain, from the point of view of its management and in accordance with the criteria adopted by the IAEA[1] and the European Commission[2], contemplates the following categories:

- ✓ Low and Intermediate Level Wastes (LILW): these are wastes containing beta-gamma emitters with half lives of less than 30 years and not generating heat as a result of decay effects, due to their low specific activity; their concentration of alpha emitters (long-lived) is very small (traces).
- ✓ High Level Wastes (HLW): these are wastes containing long-lived alpha emitters with half lives of more than 30 years in appreciable concentrations and that may generate heat as a result of radioactive decay, due to their high specific activity. The main exponent of this type of wastes is the spent fuel (SF) removed from nuclear reactors, following the decision not to reprocess it, and the wastes produced during fuel reprocessing.

As regards integral management, radioactive wastes are classified in two major groups:

- ✓ Those known as Low and Intermediate Level Wastes (LILW), which given their characteristics may be temporarily stored, treated, conditioned and disposed of at the "El Cabril" facilities (Córdoba), including the sub-group of Very Low Level Wastes (VLLW).
- ✓ Those known as High Level Wastes (HLW), which consist basically of spent nuclear fuel. This group may also include those other Intermediate Level Wastes

[1] *Safety Series No. 111-G-1.1 Classification of radioactive waste. Safety Guide. (IAEA, Vienna, 1994).*

[2] *Recommendation of the European Commission regarding a classification system for solid radioactive wastes, 1999/669/EC, EURATOM; September 15th 1999.*

(ILW) that given their characteristics are not open to definitive management under the conditions established for "El Cabril", requiring specific installations for such management.

Table 1 shows the classification of radioactive wastes and the management routes implemented or foreseen for them.

Table 1. Classification of wastes

INITIAL ACTIVITY	HALF LIFE	
	Short and medium-lived Main elements < 30 years	Long-lived Main elements > 30 years
Very Low Level Waste (VLLW)	New surface disposal installations at the "El Cabril" DISPOSAL FACILITY	"In situ" stabilisation at mining sites
Low and Intermediate Level Waste (LILW)	Existing surface disposal installation: "El Cabril" DISPOSAL FACILITY.	Forecast surface Centralised Temporary Storage facility.
High Level Waste (HLW)	Individual Temporary Storage Installations. Forecast surface Centralised Temporary Storage facility.	

B.3. Spent fuel and radioactive waste generation

In Spain radioactive wastes are generated at a series of installations distributed across the country, these being the so-called Nuclear Facilities (NF's) and Radioactive Facilities (RF's). Occasionally, wastes may be generated as a result of specific activities.

The origins of the wastes currently produced are as follows:

- ✓ Operation of nuclear power plants (eight reactors).
- ✓ Shutdown of the José Cabrera nuclear power plant.
- ✓ Dismantling of the Vandellós I nuclear power plant.
- ✓ Operation of the Juzbado Fuel Assembly Manufacturing Facility (Salamanca).
- ✓ Wastes generated at the Centre for Energy-Related, Environmental and Technological Research (CIEMAT).
- ✓ Operation of radioactive facilities for industrial, medical, agricultural and research purposes.
- ✓ Occasional incidents.
- ✓ Operation of the "El Cabril" disposal facility.
- ✓ Reprocessing in France of the spent fuel from the Vandellós I nuclear power plant.

In addition to the above, and depending on the management option decided on for the fissile material from reprocessing in Great Britain of the spent fuel from Santa María de Garoña nuclear power plant, sent prior to 1983, this will or will not be considered for management as radioactive waste.

In addition, in Spain important quantities of tailings from uranium mining and the manufacturing of uranium concentrates have been produced (around 75 million tons of mining tailings and some 14 million tons of process tailings), these having low radioactive contents occasionally requiring specific management actions.

With a view to estimating the volumes of wastes expected to be generated as a result of the operation of the current fleet of nuclear facilities, the GRWP contemplates the following reference scenario:

1. Current nuclear fleet with six plants (8 reactors) and an installed electrical power of 7,716 MWe.
2. 40 years service lifetime for the operating nuclear power plants.
3. Open fuel cycle, the option of reprocessing spent fuel not being contemplated.
4. Total dismantling (Level 3) of the light water nuclear power plants, to be initiated 3 years after their definitive shutdown.

The total volume of radioactive waste to be managed in Spain, already conditioned and open to definitive disposal at the "El Cabril" facility, amounts to some 171,500 m^3 of LILW, 52% of which - i.e. some 90,000 m^3 - might be managed in a specific manner due to their very low level of activity (VLLW).

Furthermore, the total volume of wastes that cannot be disposed of at the "El Cabril" facility would amount, once encapsulated, to some 12,800m^3, of which some 10,000m^3 would be spent fuel (6,674 tU) and the rest intermediate or high level wastes from reprocessing or the dismantling of nuclear power plants. To these should be added the wastes from the reprocessing in France of the spent fuel from the Vandellós I nuclear power plant - 13m^3 of vitrified high level waste and 670 m^3 of intermediate level wastes of different types pending return to Spain – and, if appropriate, the fissile material arising from reprocessing of the fuel from the Santa María de Garoña plant.

The diagram shown in figure 3 represents the quantity of radioactive waste to be managed in Spain.

As regards the generation of low and intermediate level wastes, figure 4 gives an idea of their typologies, quantities and origins.

As regards tailings from uranium mining operations and concentrates production, no mining works are currently in operation in Spain, some being in the restoration phase and others now having been restored. A detailed view of the tailings and concentrates associated with each installation may be found in Section D (Inventories and lists).

B.4.
Spent fuel management policies and practices

The 6th GRWP currently in force, approved in June 2006, makes a clear distinction between spent fuel and high level radioactive waste and establishes that, as regards spent fuel, open cycle management is contemplated as the basic option.

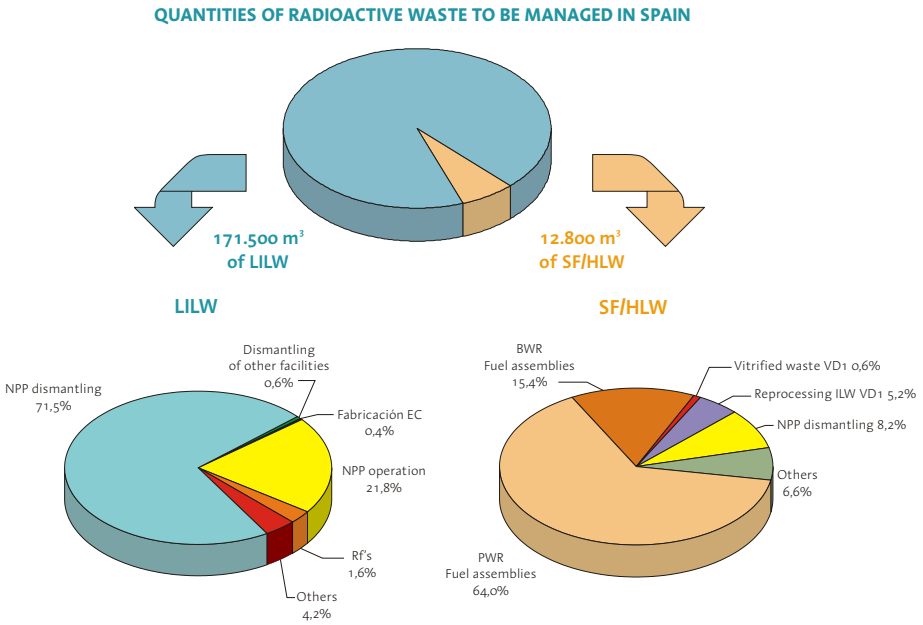

Figure 3. Proportional representation of radioactive waste volumes generated in Spain.

B.4.1. Temporary storage

The objective of temporary storage is to provide sufficient capacity to house the spent fuel generated by the Spanish nuclear power plants until such time as a definitive solution becomes available.

The spent fuel from the light water reactor plants belonging to the Spanish nuclear fleet is currently stored in the pools of the corresponding plants. In view of the forthcoming saturation of the storage capacity of these pools, throughout the nineteen nineties the original racks were progressively replaced with other more compact units, this having allowed the need to provide a storage capacity additional to the pools to be significantly deferred in most cases.

A unique case is Trillo nuclear power plant where, despite the original storage racks having been replaced with more compact units, the limitations imposed by the intrinsic design characteristics of the plant have made it necessary to increase the spent fuel storage capacity with metallic casks, which are housed in a temporary dry storage facility built on the site of the plant.

During the coming years the additional spent fuel temporary storage requirements will be dictated by the dismantling of the José Cabrera nuclear power plant and by the saturation of the fuel pools at the Ascó plant (group 1 in 2012 and group 2 in 2013).

As regards the dismantling of the José Cabrera nuclear power plant, and in accordance with the standards in force, before ENRESA can take charge of the facility to initiate the dismantling process it is necessary to unload all the fuel currently being stored in the pool (around 100tU). The plan is for the fuel to be placed over the coming years in dry storage casks, which will in turn

be housed in an Individual Temporary Storage (ITS) facility at the plant site, allowing dismantling to be initiated in 2009.

In view of the above, an additional spent fuel storage capacity will be necessary. The basic strategy contemplated in the GRWP in this respect focuses on the construction of a Centralised Temporary Storage (CTS) facility, which would house the spent fuel and HLW using a dry storage system. This solution is backed by the following:

- ✓ It allows management to be addressed under optimum conditions and in a unified manner for all spent fuel (SF), high level waste (HLW) and intermediate level waste (ILW), while making temporary management independent from definitive management.
- ✓ It provides the Spanish management system with a capacity to respond to possible unforeseen situations, such as the need to prematurely dismantle a plant, which might arise in the future.
- ✓ It reduces the number of SF, HLW and ILW storage facilities in Spain, and consequently the number of nuclear sites across the country, consequently reducing the risks and burdens associated with this type of installations. This reduction would be more significant as time went by and is particularly important as regards the security of the installation.
- ✓ It allows the sites of decommissioned nuclear facilities to be released for other uses, without restrictions.
- ✓ It allows for compliance with the clauses on the return of waste and materials from the reprocessing of spent fuel abroad.

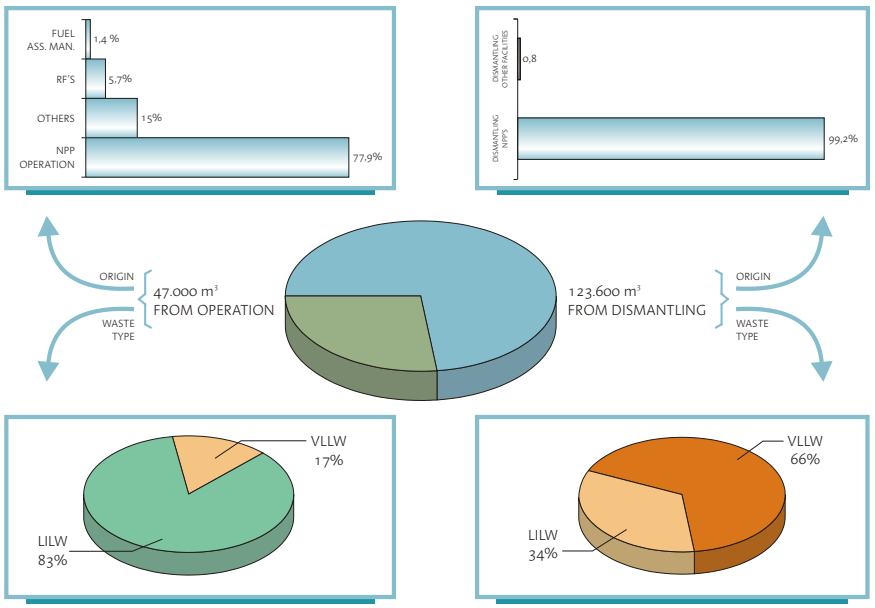

Figure 4. Low and Intermediate Level Waste (LILW/VLLW).

- ✓ From an economic point of view, it implies a very significant reduction in the cost of the overall HLW and ILW management system, compared to the option of storage at each individual plant and at the other temporary storage installations required.
- ✓ It allows operation and support services to be rationalised and optimised.

The site on which the facility would be located does not require any special characteristics, as a result of which the detailed design of the installation might be adapted to a large number of potential sites across Spain. Section G, sub-section 6.1, entitled Forecasts for new SF facilities, describes the solution proposed for the aforementioned CTS facility.

B.4.2. Final management

As regards the final management of spent fuel and high level waste, it should be pointed out that Spain has been working since 1985 on the study of different options for definitive disposal at depth, in accordance with four basic courses of action:

- ✓ Site Selection Plan (SSP), carried out until 1996. This plan has provided sufficient information to be able to conclude that there are abundant granitic, clay and – to a lesser extent – saline formations in the Spanish subsoil capable of housing a definitive disposal facility. Furthermore, the existence of widely distributed and potentially valid locations has been identified.
- ✓ Development of conceptual designs for a definitive disposal facility in each of the aforementioned lithologies, seeking maximum convergence between them.
- ✓ Performance of safety assessment exercises on the conceptual designs, integrating the know-how acquired from the tasks and projects carried out on the basis of the successive ENRESA R&D plans, which have demonstrated that geological disposal allows for compliance with the safety and quality criteria applicable to this type of facilities.
- ✓ The ENRESA R&D plans have evolved and have adapted to the Spanish SF/HLW management programme. These plans have made it possible to acquire technical knowledge and set up national working teams for development of the definitive disposal option,.

The current GRWP does not contemplate any definitive management option. It does indicate, however, that work will continue on the consolidation and updating of the knowledge acquired, with advantage taken of international developments in this area.

B.5. Radioactive waste management policies and practices

Given that long-lived HLW has been dealt with in previous sections relating to spent fuel, this section will refer only to the management policy for low and intermediate level wastes (LILW).

In Spain, LILW is produced in different regulated activities and at different regulated facilities (nuclear and radioactive) using radioactive substances or materials. It may also be necessarily occasionally to manage wastes arising from facilities that do not require any authorisation within the framework of the nuclear energy legislation (such as steelyards and metal recycling

plants). For these last cases, suitable mechanisms have been put in place to recover control over radioactive materials and guarantee their safe management as wastes when they arise.

As of today it may be stated that Spain has solved the overall issue of managing the LILW that it is estimated will be produced within the timeframe of the GRWP, since it possesses an integrated management system with the necessary capacities and configured on the basis of the activities of a series of clearly identified agents operating in a structured manner and in accordance with the directives drawn up by ENRESA.

Within this system, the nuclear facilities possess waste treatment capabilities for conditioning at the plants themselves in accordance with the waste acceptance specifications applied by ENRESA for the "El Cabril" disposal facility. In other cases the producers deliver their wastes to ENRESA in the form agreed on and the latter carries out the necessary conditioning tasks.

The "El Cabril" disposal facility in the province of Córdoba is the central axis around which the national LILW management system revolves. Its fundamental objective is the definitive disposal of this type of waste in solid form, although it also has various other technological capabilities, such as treatment and conditioning installations for the processing of wastes from radioactive facilities and of those removed from non-regulated installations. Certain complementary treatments are also carried out on wastes from nuclear facilities. The "El Cabril" facility also has waste characterisation and verification laboratories, which are the basis for the performance of the tests foreseen for the acceptance of different waste types and the verification of their characteristics, as well as the workshops, laboratories and other auxiliary systems required for its operation.

The experience accumulated in Spain in LILW management has made it possible to identify areas for improvement and define the most suitable actions to address their optimisation, intervening on those elements of the system that most require it at the time or that lead to the greatest increase in operability.

In the wake of the efforts made in recent years to improve waste management, the most representative example of which has been the reduction to less than one third of the volume of operating LILW to be managed, from both nuclear power plants and radioactive facilities, new improvements are mapped out for the future, to be applied in coordination with the waste producers, and efforts are to be made in innovation and research into treatment techniques reducing waste volumes. Emphasis is foreseen also on the complementary development of decontamination and measuring techniques.

Mention should be made of the recent entry into operation of the systems implemented at "El Cabril" for the treatment of contaminated aggregates, generated basically as a result of incidents in the metal industry, through their immobilisation in the containers normally used for the reconditioning of the drums received from nuclear facilities.

The forecasts of the current GRWP contemplate the generation over the coming years of a considerable volume of radioactive waste with very low levels of radioactivity (VLLW), fundamentally from the dismantling of nuclear facilities. The concrete cells constructed at "El Cabril", which are designed for higher level wastes, may be inappropriate for these VLLW wastes. For this purpose a new complementary installation for this type of waste has been licensed in 2008, also at "El Cabril".

As regards improvement of the capacities of "El Cabril" and the availability of resources to address future situations, the operation of the new "auxiliary conditioning building" is particularly significant. This has been designed to house LILW characterisation and decontamination techniques or the new waste treatment systems that might be necessary in the future. Also contemplated is a new facility for disused radioactive sources, more operative than the installation currently existing.

Consequently, the basic axes of the LILW management improvement activities are as follows:

- ✓ Coordination of efforts to minimise waste generation and volumes and to optimise the occupation of the volume available at "El Cabril".
- ✓ Management of VLLW at a complementary facility specifically designed for this sub-category of wastes, as part of the "El Cabril" installation.
- ✓ On-going improvement of knowledge of the waste and regarding methods and techniques relating to the performance of the disposal system and safety assessment.
- ✓ Improvement of the technological capacities available, with a view to optimising the aforementioned processes and making them more flexible, as well as for the preparation of resources to address future situations.

Section C

Scope of application

Section C. Scope of application

This section deals with the requirements included in article 3 of the Convention on the scope of application.

Art. 3: Scope of application

1 *This Convention shall apply to the safety of spent fuel management when the spent fuel results from the operation of civilian nuclear reactors. Spent fuel held at reprocessing facilities as part of a reprocessing activity is not covered in the scope of this Convention unless the Contracting Party declares reprocessing to be part of spent fuel management.*

2 *This Convention shall also apply to the safety of radioactive waste management when the radioactive waste results from civilian applications. However, this Convention shall not apply to waste that contains only naturally occurring radioactive materials and that does not originate from the nuclear fuel cycle, unless it constitutes a disused sealed source or it is declared as radioactive waste for the purposes of this Convention by the Contracting Party.*

3 *This Convention shall not apply to the safety of management of spent fuel or radioactive waste within military or defence programmes, unless declared as spent fuel or radioactive waste for the purposes of this Convention by the Contracting Party. However, this Convention shall apply to the safety of management of spent fuel and radioactive waste from military or defence programmes if and when such materials are transferred permanently to and managed within exclusively civilian programmes.*

4 *This Convention shall also apply to discharges as provided for in Articles 4, 7, 11, 14, 24 and 26.*

In Spain the scope of application of the Convention shall extend to the following:

- ✓ Spent nuclear fuel from the operation of nuclear power plants and research and training reactors.
- ✓ Radioactive wastes from the nuclear fuel cycle, as well as wastes deriving from the application of radioisotopes in industry, agriculture, research and medicine or arising as a result of past activities, incidents and accidents involving radioactive materials.
- ✓ Waste materials from uranium mining and milling facilities.
- ✓ Discharges from nuclear and radioactive facilities.

In the past certain quantities of spent fuel have been sent abroad for reprocessing; the different products that are to be returned to Spain shall also be included in the scope of application.

Radioactive materials containing natural radioisotopes and generated in practices unrelated to the nuclear fuel cycle are not included in the scope of application for the purposes of this Convention.

Section D

Inventories and lists

Section D. Inventories and lists

Art. 32. Submittal of reports

(...)

2. This report shall also include:

(i) a list of the spent fuel management facilities subject to this Convention, their location, main purpose and essential features;

(ii) an inventory of spent fuel that is subject to this Convention and that is being held in storage and of that which has been disposed of. This inventory shall contain a description of the material and, if available, give information on its mass and its total activity;

(iii) a list of the radioactive waste management facilities subject to this Convention, their location, main purpose and essential features;

(iv) an inventory of radioactive waste that is subject to this Convention that:

(a) is being held in storage at radioactive waste management and nuclear fuel cycle facilities;

(b) has been disposed of; or

(c) has resulted from past practices.

This inventory shall contain a description of the material and other appropriate information available, such as volume or mass, activity and specific radionuclides;

(v) a list of nuclear facilities in the process of being decommissioned and the status of decommissioning activities at those facilities.

D.1. Spent fuel management facilities

Spent nuclear fuel is currently stored in the pools of the nuclear power plants, except in the cases of the Trillo and José Cabrera plants. At the first of these the pool system is complemented with metallic casks housed in a dry storage facility. At José Cabrera, following the definitive shutdown of the plant and initiation of preparatory tasks for dismantling, the spent fuel will be transferred to an independent temporary storage facility on the plant site for dry storage in metal-concrete type casks.

Table 2 includes the existing facilities.

Table 2.

Name of facility	Location (Province)	Type of storage
Almaraz I NPP	Cáceres	Pool
Almaraz II NPP	Cáceres	Pool
Vandellós II NPP	Tarragona	Pool
Ascó I NPP	Tarragona	Pool
Ascó II NPP	Tarragona	Pool
Cofrentes NPP	Valencia	Pool
Sta. M. Garoña NPP	Burgos	Pool
José Cabrera NPP	Guadalajara	Pool
		Dry storage
Trillo NPP	Guadalajara	Pool
		Dry storage

✓ **Pools**

The nuclear power plant storage pools are located in the reactor building at the José Cabrera, Trillo and Santa María de Garoña plants. In the rest of the operating plants the pools are located in a building annexed to the containment and connected to it by means of the transfer channel. When there are two reactors on one same site – this being the case at Almaraz and Ascó – each group has its own pool. In the case of the Cofrentes nuclear power plant there is a second pool inside the reactor building which is used for the temporary storage of the fuel during refuelling outages.

The spent fuel storage pools whose initial capacity has been increased by re-racking with high density units have a reserve capacity for a complete reactor core if this were necessary, this being a requirement for nuclear power plant operation.

At present, the capacity of the storage pool at Cofrentes is being increased. The system adopted consists of replacing the current storage racks with other high density units (re-racking), and will serve to increase the storage capacity by almost 30%.

✓ **Spent fuel dry storage facilities (Trillo and José Cabrera nuclear power plants)**

a) Trillo nuclear power plant

The Trillo nuclear power plant cask storage facility has been in operation since 2002. It is a rectangular base surface installation with a capacity for 80 ENSA-DPT casks. The interior of the facility is divided into two clearly differentiated areas by a shielding wall: the storage area and the access area. The casks are arranged vertically in the first of these areas. In the second are the services required for operation of the facility (loading and unloading installations, maintenance, access control, etc.). The facility is designed as a passive building, ensuring that the functions of the casks are not affected.

The metallic ENSA-DPT cask has been designed for the safe storage and transport of 21 Kraftwerk Union (KWU) light water PWR reactor 16x16-20 fuel assemblies. Their design fulfils the requirements of 10 CFR 72, the IAEA Regulation on the safe transport of radioactive substances and the Spanish transport regulations.

b) José Cabrera nuclear power plant

The José Cabrera nuclear power plant was definitively shut down in April 2006. The alternative chosen has been immediate complete dismantling, such that the site might be fully released for use without any type of restriction. As a preliminary step the spent fuel stored in the pool will be transferred to a temporary dry storage facility constructed on the plant site.

The system selected, HI-STORM 100, is made up of three clearly differentiated elements: a multi-purpose metallic capsule with a capacity for 32 fuel assemblies and constituting a hermetically sealed confinement barrier, a storage module (concrete-steel hybrid) housing the capsule for long-term storage and a transfer container used for capsule loading, unloading and transfer operations. The system is completed with the HI-STAR transport cask for the future transport of the loaded capsule to the facility in which the next stage of management will be carried out.

The temporary storage facility is an outdoor installation linked to the plant by an access road for the transfer of the loaded storage modules by means of a special vehicle for this task. The installation consists basically of a reinforced concrete slab on which will be placed vertically the 12 modules required to house the 377 fuel elements from the plant. The facility is equipped with a double security fence and a fence bounding the free access zone. Authorisation for start-up was granted in March 2008.

D.2. Spent fuel inventory

Table 3 shows the total amounts of spent fuel existing in Spain as of December 31st 2007.

D.3. Radioactive waste management facilities

Article 2 of the Joint Convention defines "Radioactive waste management facilities" as follows:

> *A "radioactive waste management facility" is understood as being any unit or installation whose main purpose is the management of radioactive wastes, including nuclear facilities in the process of decommissioning only if designated by the Contracting Party as radioactive waste management facilities;*

In view of this definition, the scope of this list of facilities does not include the "minor producers", since their radioactive wastes are collected and processed by ENRESA at the "El Cabril" disposal facility. Consequently, the radioactive waste management facilities are as follows:

Table 3.

Name of the facility	Fuel assembly characteristics	Total capacity with reserve core (tU)	SF stored (tU)	Total capacity/reserve core (No. of assemblies)	SF stored (No. of assemblies)
Almaraz I NPP	PWR 17x17	764	499	1804/157	1076
Almaraz II NPP	PWR 17x17	764	495	1804/157	1068
Vandellós II NPP	PWR 17x17	666	390	1594/157	840
Ascó I NPP	PWR 17x17	575	480	1421/157	1036
Ascó II NPP	PWR 17x17	583	442	1421/157	952
Cofrentes NPP	BWR 8x8, 9x9	880	598	4186/624	3216
Sta. M. Garoña NPP	BWR 8x8, 9x9	387	326	2609/400	1860
José Cabrera NPP	PWR 14x14	127	100	548/69	377
Trillo NPP	PWR 16x16	296[1]	251	805/177	530
		796[2]	139	1680/-	294

[1] *Plant pool.*
[2] *Dry storage facility (80 casks 9.8 tU/Unit).*

✓ **Operating nuclear power plants.**

All the nuclear power plants have installations for the treatment of their liquid wastes and conditioning of solid wastes: pre-compacting and immobilisation. There are also temporary storage installations at each plant for holding of the wastes prior to their transfer to the "El Cabril" LILW disposal facility.

✓ **Vandellós I nuclear power plant in the dismantling phase.**

The plant has an installation in the lower part of the reactor building for the temporary storage of the low and intermediate level wastes generated during the process of dismantling, this being an intermediate and specific solution for the graphite wastes from fuel assembly sleeves that cannot be managed at "El Cabril".

✓ **José Cabrera nuclear power plant in the shutdown phase.**

The plant has liquid and solid waste treatment facilities that have continued to operate following the shutdown of the plant. The wastes resulting from certain currently on-going decontamination tasks are treated at these installations and temporarily stored at the plant prior to being shipped to "El Cabril".

✓ **Juzbado fuel manufacturing facility**

Like the nuclear power plants, this facility has a plant for the treatment of its liquid wastes, by desiccation and immobilisation in cement. For the pre-conditioning of

its solid wastes the facility uses pre-compacting and for final conditioning immobilisation in cement. The existing temporary storage facility serves as an intermediate stage prior to transport of the wastes to "El Cabril".

✓ **CIEMAT (processing and temporary storage facilities)**

The Centre for Energy-related, Environmental and Technological Research (CIEMAT) is authorised for the conditioning of the solid low and intermediate level wastes generated at the Centre and for the provisional storage of sources and other radioactive materials in transport packages meeting the requirements established in the national Regulation on the road transport of hazardous goods.

CIEMAT treats and conditions wastes arising from the research activities carried out at the Centre, relating fundamentally to developments for radioactive waste management, the tracking of materials and other activities involving the use of tracers and radioactive materials.

The storage capacities are currently being extended in order to be able to store the very low level or declassifiable wastes arising from the performance of the PIMIC-Rehabilitation project (see section D.5.).

✓ **"El Cabril" low and intermediate level waste disposal facility**

The "El Cabril" disposal facility has treatment and conditioning systems for solid and liquid wastes. These systems are used to treat and condition all the wastes requiring such interventions prior to their disposal at the facility. In view of the policy defined in the General Radioactive Waste Plans, most of the wastes treated and conditioned at "El Cabril" come from radioactive facilities or are generated at this centre itself, although the installation also has the systems required for the final conditioning of wastes from nuclear facilities prior to their final incorporation in the disposal cells.

A) Low and intermediate level waste

➪ Treatment and conditioning of wastes from radioactive facilities.

The wastes generated by the minor producers are segregated by them at their installations and subsequently transported to "El Cabril". The transfer of the wastes is undertaken in accordance with a removal agreement between the producer and ENRESA, which adheres to the system of waste categories established by the MITYC. Treatment of the different types of wastes at the "El Cabril" facility is performed in such a way as to minimise the production of secondary wastes and to obtain final solid products meeting the necessary long-term stability conditions.

"El Cabril" is equipped with an area for the conditioning of wastes from minor producers, in which there is a glove box for emptying of the containment units, a pre-compacting unit for compactable wastes not implying any biological risk, an incinerator for decomposable solids, solids with biological risk, scintillation liquids, oils and solvents, and an area for the immobilisation of the final wastes produced by these treatments and the direct immobilisation of radioactive sources, hypodermic needles and cutting solids.

➪ Final conditioning wastes from major producers.

The major producers (nuclear power plants and fuel assembly manufacturing facility) are required to condition their low and intermediate level wastes in

packages meeting the ENRESA acceptance criteria for transport to the "El Cabril" facility, and these wastes are conditioned in such a way as to not require subsequent treatment processes.

There is also a second category made up of waste packages that have been pre-compacted at their place of origin due to their physical characteristics. The "El Cabril" facility has a drum compacting unit with a capacity of 1200 t, capable of achieving volume reductions of around 3 on average. The compacted wastes are conditioned in containers for final disposal.

- Temporary storage at the "El Cabril" facility.

  The "El Cabril" facility has two sets of installations used for the temporary storage of solid wastes: the "modules" and the transitory reception building. The first are three buildings constructed during the 1980's for the long-term temporary storage of wastes. Each has a nominal capacity for 5,000 220-litre drums. At present the process of identifying units produced prior to 1992 continues, the aim being to transfer them to the disposal cells following verification of the compliance with the acceptance criteria. In addition, these installations are used to house special heterogeneous wastes pending treatment for final disposal. The transitory reception building, located on the "El Cabril" site, has an area for the buffer storage of waste packages.

- Definitive disposal at the "El Cabril" facility.

  The low and intermediate level waste disposal system at "El Cabril" is of the shallow type in disposal cells. There are currently 28 disposal cells. The conditioned waste packages are transferred to disposal containers which, once complete, are filled with mortar. Once this process is completed, the containers are transported to the disposal platform and placed in the cells.

B) Very low level waste

Since 2008, the "El Cabril" facility has had a specific very low level waste disposal area, consisting of a cell with a disposal capacity of some 30,000 m^3. The cell is a pit excavated in the ground over which a series of drainage or waterproofing layers have been arranged to prevent the possible dispersion of leachates in the medium. The aim in the future, when this cell is full, is to construct a further three until the authorised capacity of 130,000 m^3 is completed. In this way it will be possible to definitively dispose of the contaminated materials arising especially from the dismantling of facilities, the specific activity of which is hundreds of times lower than that of the low and intermediate level wastes currently disposed of in the other area of "El Cabril".

The very low level wastes arrive at "El Cabril" in drums, sacks or metallic containers and are either sent directly to the cell or temporarily deposited in the Technology Building. The latter is equipped with systems for stabilisation, compacting or volume minimisation, depending on the treatment required by the different types of wastes arriving.

Table 4 contains a list of the different radioactive waste management facilities, including their location, purpose and main characteristics.

Table 4.

Name of facility	Location (Province)	Main purpose	Other characteristics
Almaraz I NPP	Cáceres	Treatment, preliminary conditioning and temporary storage	Installations for management of the wastes arising as a result of operation of each of the nuclear power plants
Almaraz II NPP	Cáceres	Treatment, preliminary conditioning and temporary storage	
Vandellós II NPP	Tarragona	Treatment, preliminary conditioning and temporary storage	
Ascó I NPP	Tarragona	Treatment, preliminary conditioning and temporary storage	
Ascó II NPP	Tarragona	Treatment, preliminary conditioning and temporary storage	
Cofrentes NPP	Valencia	Treatment, preliminary conditioning and temporary storage	
Sta. Mª Garoña NPP	Burgos	Treatment, preliminary conditioning and temporary storage	
José Cabrera NPP	Guadalajara	Treatment, preliminary conditioning and temporary storage	
Trillo NPP	Guadalajara	Treatment, preliminary conditioning and temporary storage	
Vandellós I NPP	Tarragona	Temporary storage	Installations for storage of part of the wastes from dismantling of the plant
Juzbado fuel manufacturing facility	Salamanca	Treatment, preliminary conditioning and temporary storage	Installations for management of the technological wastes from plant operation
CIEMAT	Madrid	Preliminary conditioning and temporary storage	Installations inside the nuclear research centre
"El Cabril" disposal facility	Córdoba	Temporary storage Final disposal	3 concrete modules + transitory reception building 28 near-surface reinforced concrete cells 1 trench cell for the storage of very low level wastes

D.4. Radioactive waste inventory

Table 5 shows the inventory of radioactive wastes as of December 31st 2007.

Table 5.

Name of facility	Type of facility	Type of waste	Volume (m^3)	Activity (GBq)	Main radionuclides
Almaraz I	NPP	VLLW	1684	1.55E6	Co-60, Cs-137
Almaraz II	NPP	VLLW			
Vandellós II	NPP	VLLW	325	5.8E4	Co-60, Cs-137
Ascó I	NPP	VLLW	679	1.5E5	Co-60, Cs-137
Ascó II	NPP	VLLW			
Cofrentes	NPP	VLLW	1784	1.2E5	Co-60, Cs-137
Sta. M. Garoña	NPP	VLLW	1061	1.5E5	Co-60, Cs-137
José Cabrera	NPP	VLLW	491	8.9E4	Co-60, Cs-137
Trillo	NPP	VLLW	199	3.4E3	Co-60, Cs-137
Vandellós I	NPP	VLLW	2977	8.6E3	Co-60, Ni-63
Juzbado	Fuel assembly manufacturing facility	VLLW	491	1.4E1	U-234,U-235,U-238
CIEMAT	Research centre	VLLW	10	——-	Co-60, Cs-137, Eu-152
El Cabril	LILW disposal facility	VLLW	55988 (*)	2.7E7	Co-60, Cs-137

(*)5,027 C-2 concrete containers.

D.5. Facilities in the decommissioning phase

✓ **Vandellós 1 nuclear power plant**

The Vandellós 1 nuclear power plant operated from 1972 until October 1989, when it suffered an accident in its conventional part. This French technology plant was the only graphite-gas unit built in Spain. In 1992, following the definitive suspension of its operating permit, the Ministry of Industry and Energy accepted the dismantling alternative proposed by ENRESA. The Plan consisted of partially dismantling the facility to IAEA Level 2, followed by a dormancy period of some 25 years and subsequent total dismantling to IAEA Level 3.

Although the dismantling project was completed in June 2003, it was not until January 2005 that the dormancy period began, following the issuing of the corresponding Ministerial Resolution by the Directorate General for Energy Policy and Mines. During this dormancy period the surveillance and control activities required for dismantling to Level 3, on completion of this waiting period, will be carried out.

✓ **José Cabrera nuclear power plant**

The José Cabrera nuclear power plant ceased to operate in April 2006, following a decision by the authorities not to renew its operating permit. It is a pressurised water reactor (PWR) type plant with a low power output (160 MW). Starting up in 1968, it was Spain's first nuclear power plant.

In accordance with the policy set out in the 6th GRWP, José Cabrera nuclear power plant will be dismantled to IAEA Level 3 and its site released for use of any type. At present the plant is in a phase of declared definitive shutdown, this covering the activities to be performed by the facility from definitive shutdown of the reactor until the dismantling authorisation is granted. The owner company is working on maintaining the conditions of the fuel stored on site, on conditioning of the plant operating wastes and on preparatory tasks for the complete dismantling of the facility, which includes leaving it under safe conditions. This process will be undertaken by ENRESA following transfer of ownership and responsibility and approval of the dismantling and decommissioning project by the Ministry of Industry, Tourism and Trade, in the wake of a favourable report by the CSN. Dismantling is expected to start during 2009.

As has been pointed out in previous section D.1., the spent fuel currently in the plant pool will be removed and taken to an individualised temporary storage facility on the plant site.

✓ **CIEMAT installations**

The Integrated Plan for the Improvement of the CIEMAT Installations (PIMIC) consists of dismantling certain obsolete installations for which no further use is foreseen and of using the spaces released for the performance of other activities. The Plan, in which work will continue until 2009, is controlled and supervised by the CSN and the MITYC. During its performance, CIEMAT will continue to be the responsible licensee of the facility and will provide the necessary support.

The PIMIC began with the tasks of preparing the site, including the auxiliary installations required for the performance of dismantling and rehabilitation activities. The period 2006-2009 includes equipment and system disassembly activities, decontamination, declassification and restoration of the different installations and terrains.

The main installations affected by the PIMIC are the JEN-1 experimental reactor and the irradiated fuel reprocessing pilot plant, currently completely dismantled and in the decontamination phase. Other elements also in the dismantling phase are the liquid radioactive waste storage and conditioning plants, the research reactor fuel assembly development plant (completely dismantled and in the phase of administrative decommissioning), the metallurgical hot cells and the radionuclide metrology laboratory, all of these also fully involved in the process of rehabilitation and dismantling.

The PIMIC also contemplates the cleaning and restoration of certain terrains affected by operational contamination incidents.

✓ **Saelices el Chico mining facilities**

The work carried out includes the dismantling of the two uranium concentrates manufacturing plants (Elefante and Quercus plants) and the restoration of the mining facilities of the FE and D deposits that until the end of 2000 fed the ENUSA Quercus plant at Saelices el Chico (Salamanca). This installation was dismantled in 2004. At present work is under way on the final phase of restoration of the sites, which will be completed by mid 2008, pending the final treatment of the waters stored at the facility.

✓ **Andújar Uranium Mill**

The surveillance tasks continue at the site of the Andújar Uranium Mill (AUM), in accordance with the requirements established in the set of conditions issued by the CSN, contemplated in the Resolution of the Ministry of Industry and Energy of March 17th 1995.

✓ **Disused uranium mining installations restoration plan**

The set of activities included in this Plan contemplated the restoration of 24 sites on which mining activities had been carried out.

The project was approved by the Ministry of Industry and Energy in 1997, following a favourable report from the CSN and the corresponding autonomous community, provincial and local administrations. Work began in November 1997 and was completed in March 2000. This was directed by ENRESA and performed by ENUSA.

Furthermore, in 2007 ENUSA completed a new restoration project at two other disused uranium mines, operated in their day by the former Nuclear Energy Board (JEN), on which work had begun in 2006.

Table 6.

Facilities in the dismantling phase

PROGRAMME	NAME	LOCATION	STATUS	PERFORMANCE
Vandellós I NUCLEAR POWER PLANT dismantling project	Vandellós I	Vandellós, Tarragona	Dormancy (Dismantled to Level 2)	1998 - 2004
Integrated Plan for the Improvement of CIEMAT Installations	CIEMAT	Madrid	Licensing and preliminary work	2004-2007
Plan for the dismantling and restoration of the facilities at Saelices el Chico	Elefante and Quercus facilities Fé and D mines	Saelices el Chico	Installations dismantled, restoration tasks	2001- 2008
José Cabrera NUCLEAR POWER PLANT Dismantling project	José Cabrera NUCLEAR POWER PLANT	Zorita de los Canes Guadalajara	Definitive shutdown Dismantling and Decommissioning Plan Pending	2009-

D.6. Decommissioned facilities

✓ **Arbi experimental reactor**

The "Argonaut" type Arbi reactor (at the industrial testing and research laboratories, Laboratorios de Ensayos e Investigaciones Industriales –Labein- in Bilbao) was dismantled in 2004. The decommissioning declaration was issued in June 2005.

✓ **Argos experimental reactor**

The Argos reactor, located at the Polytechnic University of Catalonia, in Barcelona, was similar to the Arbi reactor. Its dismantling was completed in 2002 and the decommissioning declaration was issued in 2003.

✓ **La Haba mining facilities and Lobo G Plant**

The programme for the restoration of the La Haba facilities, consisting of four open cast mines and associated rubble tips, was carried out as from 1990. The dismantling of the uranium concentrates plant (Lobo G Plant) with its leaching beds and steriles dykes took place between 1995 and 1997. In January 1998, a Resolution by the Directorate General for Energy declared the dismantling and restoration of the site to be completed and initiated the period of compliance with the conditions established in the aforementioned Resolution for a minimum 5 years.

A Ministerial Order issued by the MITYC on August 2nd 2004 granted the declaration of decommissioning for the facility, following verification by the CSN of compliance with the conditions relating to safety and radiological protection imposed by the Administration.

The area corresponding to the process steriles dyke remained subject to a long-term control programme with restrictions on use. The bordering areas were released for use as pasture or forestry land, in keeping with the local habits.

Table 7.
Mining and process steriles.

Facility	Location (province)	Mining steriles (x 10^6 t)	From beds (x 10^6 t)	From sludges (x 10^6 t)
Andújar Uranium Mill	Jaén			1.20
Lobo-G Plant	Badajoz	6.3		0.28
Elefante Plant	Salamanca		7.2	0.3
Saelices el Chico	Salamanca	68		
Quercus Plant	Salamanca		3,8	0.95

Table 8.
Situation of facilities in dismantling and decommissioning.

PROGRAMME	NAME	LOCATION	STATUS	PERFORMANCE
Andújar Uranium Mill decommissioning and dismantling plan	AUM	Andújar, Jaén	Dismantled	1991 – 1994
Argos experimental reactor	Argos	Barcelona	Decommissioned and dismantled	2002 - 2003
Arbi experimental reactor	Arbi	Bilbao	Decommissioned and dismantled	2004 - 2005
La Haba facilities decommissioning and dismantling plan	Lobo G	La Haba, Badajoz	Decommissioned and dismantled	1990-1997
Restoration plan for disused uranium mines in the Autonomous Community of Andalusia	1. La Virgen	Andújar, Jaén	Restored	May 99 – March 00
	2. Montealegre	Andújar, Jaén	Restored	May 99 - July 99
	3. Navalasno	Andújar, Jaén	Restored	May 99 - Sept. 99
	4. Cano	Cardeña, Córdoba	Restored	July 98 – Dec. 99
	5. Trapero	Cardeña, Córdoba	Restored	July 98 – March 99
	6. San Valentín	Cardeña, Córdoba	Restored	July 98 – March 99
Restoration plan for disused uranium mines in the province of Salamanca	1. Casilla de Flores	Casilla de Flores, Salamanca	Restored	2006 – 2007
	2. Valdemascaño	Lumbrales, Salamanca	Restored	2006 - 2007
Restoration plan for disused uranium mines in the Autonomous Community Extremadura	1. Pedro Negro	Alburquerque, Badajoz	Restored	April 99 – June 99
	2. Calderilla	Alburquerque, Badajoz	Restored	February 99 – May 99
	3. Viesgo II	Ceclavín, Cáceres	Restored	August 99 – Nov. 99
	4. Sevillana	Ceclavín, Cáceres	Restored	August 99 – Nov. 99
	5. Valdellascón	Alburquerque, Badajoz	Restored	January 99 – Sept. 99
	6. Carretona	Torremocha, Cáceres	Restored	Nov. 97 – June 98
	7. Ratones	Albalá , Cáceres	Restored	Feb. 98 – March 99
	8. Cabra Baja	Villanueva del Fresno, Badajoz	Restored	Nov. 97 – June 98
	9. Broncana	Albalá , Cáceres	Restored	March 98 – June 98

PROGRAMME	NAME	LOCATION	STATUS	PERFORMANCE
Restoration plan for disused uranium mines in the Autonomous Community Extremadura	10. Gargüera	Tejeda del Tiétar, Cáceres	Restored	April 98 – Jan. 99
	11. Perdices	Albalá, Cáceres	Restored	Feb. 98 – Sept. 98
	12. El Sabio	Alburquerque, Badajoz	Restored	Jan. 99 – May 99
	13. Zafrilla	Casar de Cáceres, Cáceres	Restored	April 99 – Nov. 99
Project for restoration of the La Haba uranium mines	1. Pedregal	La Haba. Badajoz	Restored	1990 - 1997
	2. María Lozano	La Haba. Badajoz	Restored	1990 - 1997
	3. Intermedia	La Haba. Badajoz	Restored	1990 - 1997
	4. Lobo	La Haba. Badajoz	Restored	1990 - 1997

Section E

Legislative and regulatory system

Section E. Legislative and regulatory system

Article 18
Implementation of measures

Article 18. Implementing measures

Each Contracting Party shall take, within the framework of its national law, the legislative, regulatory and administrative measures and other steps necessary for implementing its obligations under this Convention.

Spain has a legislative, regulatory and administrative framework adequate to comply with the obligations arising from this Convention. The Ministry of Industry, Tourism and Trade (MITYC) and the Nuclear Safety Council (CSN), in collaboration with ENRESA, continue to work within their respective realms of competence on the on-going improvement of standards relating to waste and spent fuel management.

In relation to the above, consideration is given to the applicable national standards, international experience and standards and, in particular, analysis of the applicability of the IAEA's programme of standards for safe management of waste and all those elements that, while not being reflected in the standards, have made it possible to successfully address aspects arising in the authorisations granted to date for radioactive waste management.

Assessment of compliance

The current legal framework for nuclear facilities is sufficient to guarantee safety in the management of spent fuel and radioactive waste at the current facilities, in compliance with this article of the Convention.

Article 19
Legislative and regulatory framework

Art. 19 Legislative and regulatory framework

1. *Each Contracting Party shall establish and maintain a legislative and regulatory framework to govern the safety of spent fuel and radioactive waste management.*
2. *This legislative and regulatory framework shall provide for:*

(i) the establishment of applicable national safety requirements and regulations for radiation safety;

(ii) a system of licensing of spent fuel and radioactive waste management activities;

(iii) a system of prohibition of the operation of a spent fuel or radioactive waste management facility without a licence;

(iv) a system of appropriate institutional control, regulatory inspection and documentation and reporting;

(v) the enforcement of applicable regulations and of the terms of the licences;

(vi) a clear allocation of responsibilities of the bodies involved in the different steps of spent fuel and of radioactive waste management.

3. When considering whether to regulate radioactive materials as radioactive waste, Contracting Parties shall take due account of the objectives of this Convention.

19.1 Novelties in the main legal provisions regulating spent fuel and radioactive waste management

During the period described in the present report there have been important legislative and regulatory changes in the national legal system regulating nuclear energy in general and spent fuel and radioactive waste management in particular. Although the fundamental provisions of the legal and regulatory framework continue to be the same, important changes have been introduced, either through provisions relating to the nuclear sector or through provisions of a general nature having an impact on this area.

The present section describes the novelties that have occurred in the provisions of legal rank of the internal legal system in relation to spent fuel and radioactive waste management. It also includes the changes that have occurred in the European Community standards in this area, whose provisions are directly applicable to the internal legal system or need to be transposed to it.

The main novelties in the legal provision of regulatory rank, both those of Government Regulations and those included in the Instructions of the Nuclear Safety Council (CSN), are dealt with in sections 20.3 and 20.4, respectively, of the present report.

Nuclear Energy Act, Law 25/1964, of April 29th (NEA)

During the period of the report there have been several revisions of specific aspects of this Act, which is the main legal provision regulating nuclear energy in Spain, through the approval of the following provisions:

a) Law 24/2005, of November 18th, on reforms to promote productivity.

This Law, which is a general provision with economic and social objectives, introduced several changes in existing legal standards regulating nuclear energy, as well as certain legislative novelties in relation to spent fuel and radioactive waste management.

As regards the NEA, articles 28, 29 and 30 were reworded in order to clarify certain aspects relating to arrangements for and transfer of authorisations for nuclear and radioactive facilities and the supervision by the CSN of safety and radiological protec-

tion at these facilities throughout their service lifetime (see sub-section 19.2 of Section E of this Report). Likewise, article 84 on non-proliferation and security was reworded in order to extend to all physical and legal persons compliance with the international commitments contracted by the State in relation to nuclear non-proliferation and the security of nuclear materials.

b) Law 17/2007, of July 4th, reforming the Electricity Industry Act, Law 54/1997, of November 27th.

The objective of this law is to revise Law 54/1997, in order to adapt the requirements of the European Parliament and Council Directive 2003/54/CE, of June 26th 2003, on common standards for the interior electricity market, to the Spanish legal system.

This Law introduces certain changes in the NEA in relation to civil liability for nuclear damage, the aim being to increase the level of obligatory coverage of facilities and transport operations and introduce a new system of civil liability for environmental nuclear damage independent from the general system, as described in section 21.2.

c) Law 33/2007, of November 7th, reforming Law 15/1980, of April 22nd creating the Nuclear Safety Council.

This Law introduced an important reform of the law creating the Nuclear Safety Council, Law 15/1980, and advantage was taken of it also to revise various articles of the NEA and fully update the system of sanctions in relation to nuclear energy.

In summary, the changes introduced are as follows:

- ✓ Article 1, which establishes the objective of the Act, limiting it to the establishment of the legal system governing the peaceful use of nuclear energy and regulation of the application of the international commitments acquired by the Spanish State in this area is reworded.
- ✓ Article 2 gives a new definition of the experimental devices and installations than use fission or fusion nuclear reactions to produce energy or for the development of energy sources, these being subjected to the same system of authorisations as nuclear facilities.
- ✓ Article 36 is revised to expressly place on record the responsibility of the licensees of nuclear and radioactive facilities to guarantee their safety, as well as to carry out their activities adopting the measures required to prevent accidents and mitigate their consequences were they to occur.
- ✓ Analogously, article 37 is revised to expressly place on record the obligation of the organisations responsible for the management of nuclear and radioactive facilities to ensure human, technical and economic resources fulfilling the conditions of suitability established in the regulations for the adequate maintenance of safety conditions.
- ✓ A new paragraph is added to article 38 to expressly place on record the obligation of the licensees of nuclear and radioactive facilities to suitably protect persons, property and the environment against ionising radiations in all phases of spent fuel and radioactive waste management, as well as to minimise the production of the latter, as regards both quantity and activity, in accordance with the best scientific practices available at each moment.
- ✓ Finally, a new article 44 two is introduced in order to establish that installations that, while not being regulated as nuclear or radioactive facilities, generate or might generate waste materials with radioactive contents should be subject to the

regulations governing such facilities when so determined by the Ministry of Industry, Tourism and Trade, following a report by the Nuclear Safety Council.

As regards the system of sanctions in relation to nuclear energy, which is established in Chapter XIV (articles 85 to 92) of the NEA, this Chapter is integrally revised and updated as explained in section 19.4 of this report.

Law 15/1980, of April 22nd, creating the Nuclear Safety Council

During the period of the report, the Law creating the CSN was amply revised through the approval of a specific reforming law, Law 33/2007, of November 7th.

This Law introduces a substantial reform of Law 15/1980, the aim being to take into account the experience acquired during this period, to incorporate the modifications made over time in its articles, to adapt it to increasing social sensitivity in relation to the environment and to introduce or develop certain aspects, with a view to guaranteeing the maintenance of effective independence and reinforce the transparency and efficiency of the Organisation.

This reforming law has not changed the legal standing of the CSN or its competences and basic organisation, but has meant a strengthening of its functions, as well as of the administrative and organisational instruments required for the efficient, credible and transparent performance of the tasks commissioned to it, providing the public with ample information on its activities and promoting public participation in the areas for which it is responsible.

The main changes introduced in Law 15/1980 are as follows:

- ✓ The nature of the standards documents of the CSN (Instructions) is specified, along with the procedure for their preparation and communication to Congress prior to approval. Also clarified is the nature of the informative (Circulars) and recommendatory (Guides) documents of the CSN, and of the complementary technical instructions addressed directly to the licensees of the authorisations to guarantee maintenance of the safety requirements and conditions of facilities and activities.
- ✓ The CSN is assigned functions relating to physical protection, which were not previously contemplated, such as the issuing of reports prior to the granting of physical protection authorisations for facilities and activities and proposing the opening of sanctions proceedings.
- ✓ New functions assigned are cooperation with the respective competent authorisations in relation to programmes for the radiological protection of persons subjected to medical diagnosis or treatment procedures using ionising radiations and to the performance of nuclear safeguards inspections deriving from commitments made by the Spanish State.
- ✓ Certain aspects relating to the internal organisation of the different governing bodies of the CSN are specified, such as the procedures for the appointment and dismissal of the President and Counsellors.
- ✓ The CSN is obliged to keep the Parliament and Government of the State, and the Parliaments and Governments of the autonomous communities concerned, punctually informed of any event affecting the safety of nuclear and radioactive facilities. Every year the CSN is required to submit its report on activities to the two Houses of the State Parliament, as it has done traditionally, and to the two Houses of Parliament of the Autonomous Communities housing nuclear facilities.
- ✓ The public right to access information and to participate in relation to the competences of the CSN is regulated in the same terms as established in Law 27/2006, of

July 18th, which regulates the rights regarding access to information, public participation and access to justice in environmental matters.

- ✓ Also established is the right-obligation of physical and legal persons at the service of nuclear and radioactive facilities to inform the licensees, and the CSN if adequate corrective measures are not taken, of any event that actually or potentially affects the safe operation of such facilities. The exercising of this right-obligation shall not imply any adverse effects for the workers, except in the case of their acting in bad faith being accredited, and any employers taking reprisals against the workers as a result of their exercising this right-obligation shall be penalised in accordance with the legislation on nuclear energy.
- ✓ The CSN is obliged to make information on the safety of the facilities available to the members of the public, in particular information on whatever events and incidents might take place at them, as well as all the agreements reached by the Plenary of the Council. In addition, the CSN Instructions and Guides are to be subjected to a process of public comments during their period of development. The CSN is also required to make extensive use of telematic procedures and promote and participate in information forums in the areas surrounding nuclear facilities.
- ✓ An Advisory Committee is set up, the mission of which is to issue recommendations to the CSN in order to improve its transparency, access to information and public participation in matters within its realm of competence. This Committee shall be presided over by the President of the CSN and its members, who shall be appointed by the President of the CSN, shall be from different ministerial Departments concerned, from Autonomous Communities having nuclear facilities in their territory or function assignment agreements with the CSN or those other members determined in art. 15.

Certain of the new provisions of the Law, especially those affecting the internal organisation of the CSN and the operating and decision-making rules of the Advisory Committee, shall be enacted via the new Charter of the CSN, which shall be drawn up by the Council, approved by the Government and submitted to the competent Commissions of the Congress and Senate before publication.

Electricity Industry Act, Law 54/1997, of November 27th

Law 54/1997 is the main legal instrument regulating the electricity industry overall, including the generation of electricity by nuclear means. As regards nuclear energy specifically, apart from the general aspects of electricity generation, the Law contemplates measures relating to the treatment of the amounts deposited in the Fund for the financing of activities included in the General Radioactive Waste Plan (GRWP), as well as the economic compensations to be paid to the companies owning nuclear assets whose construction was frozen through Law 40/1994, of December 30th, on the Ordering of the Electricity System.

During the period of the report, relevant changes have been made to this standard, particularly as regards contributions to the Fund, through the approval of the following legal provisions:

a) Royal Decree Law 5/2005, of March 11th, on urgent reforms to promote productivity and improve contracting.

   This Royal Decree referring generally to economic issues has the rank of Law and introduced a partial revision of the procedure for economic transfers to the Fund for the financing of activities included in the General Radioactive Waste Plan (GRWP) established in the sixth additional provision of the electricity industry act, Law

54/1997. The content of this Royal Decree, already dealt with in the second national report on the Joint Convention, is summarised in the present report in order to facilitate understanding of the rest of the modifications introduced in the legal framework governing the management of radioactive waste, spent fuel and dismantling.

The objective pursued is to oblige the licensees of nuclear facilities to internalise all the costs of radioactive waste and spent fuel management and of the dismantling and decommissioning of facilities incurred as from March 31st 2005, in order to make fully effective the application of the criterion of "the polluter pays". This standard imputes as expenses all costs relating to the technical activities and support services required for the performance of the actions foreseen in the GRWP, including those corresponding to structural costs and R&D projects and activities. Additionally, it is established that the State shall take over the ownership of radioactive wastes once they have been definitively disposed of and undertake whatever surveillance might be required following the decommissioning of the facilities, on completion of the period established in the corresponding declaration of decommissioning.

Law 24/2005, of November 18th, on reforms to promote productivity

This Law introduced a new sixth additional provision two in Law 54/1997, the aim being to have the management of radioactive waste, including spent fuel, and the dismantling and decommissioning of nuclear and radioactive facilities considered as an essential public service, ownership of which shall be exclusively to the State.

Law 33/2007, of November 7th, reforming Law 15/1980, of April 22nd, creating the CSN

Law 33/2007 has revised certain aspects of the treatment of transfers to the Fund for the financing of GRWP activities. The main novelty has been to enable ENRESA to impute to the management of the wastes financed by the GRWP Fund the assignments set aside for municipal areas affected by nuclear power plants or spent fuel or radioactive waste storage facilities, in the terms established by the MITYC, along with the amounts corresponding to levies applied in relation to radioactive waste and spent fuel storage activities.

Certain technical aspects of the standards governing contributions to the GRWP Fund introduced by Law 24/2005 are also revised.

Law 9/2006, of April 28th, on the assessment of the environmental effects of certain plans and programmes

This Law incorporates into Spanish internal law the requirements of European Parliament and Council Directive 2001/42/CE, of June 27th 2001, on assessment of the environmental effects of certain plans and programmes, as an instrument of prevention allowing environmental aspects to be integrated into decision-making regarding public plans and programmes. It also pursues the promotion of transparency and public participation via access, in adequate terms, to exhaustive and trustworthy information on the planning process.

Consequently, the provisions of this Law should also be applied to the process of drawing up the general radioactive waste plans, since these are approved by the Government in response to a proposal by the MITYC.

Law 27/2006, of July 18th, regulating rights to access to information, public participation and access to justice in environmental matters

This Law incorporates in the Spanish internal legal system the European Parliament and Council Directive 2003/4/CE, of January 28th 2003, on public access to environmental information, and European Parliament and Council Directive 2003/35/CE, of May 26th 2003, establishing measures for public participation in certain plans and programmes relating to the environment, as well as the commitments undertaken with ratification of the Aarhus Convention, of June 25th 1998, on access to information, public participation in the decision-making process and access to justice in relation to environmental matters.

The objective of this Law is to facilitate the individual or collective participation of the members of the public in this task of protecting the environment, in a real and effective manner, providing suitable instrumental resources for this purpose.

Law 12/2006, of December 27th, on complementary taxes within the Budget of the Autonomous Community of Andalusia

This Law, approved by the Parliament of the Autonomous Community of Andalusia, is complementary to the Budget Law of the said Community and introduces a new tax on radioactive waste depositing operations within its territory.

Taking into account that the low and intermediate level radioactive waste storage facility managed by ENRESA is located within the Autonomous Community of Andalusia, the waste depositing operations carried out at this installation are subject to payment of this tax. In accordance with the new wording of the sixth additional provision two of Law 54/1997, introduced by Law 33/2007, this tax is levied against those who deliver radioactive waste for storage or, in lieu of the latter, against the operators of the radioactive waste deposit.

Royal Legislative Decree 1/2008, of January 11th, approving the modified text of the Law on the Assessment of Environmental Impact of projects

This standard approves the reworded text of the Law on the Assessment of Environmental Impact. It is a rewording that does not include the environmental assessment of certain plans and programmes that are regulated by Law 9/2006, of April 28th.

Annex I of this RLD 1/2008 includes the activities that are to be subjected to impact assessment:

- ✓ Nuclear power plants and other nuclear reactors, including their dismantling or definitive shutdown. These installations shall cease to be considered nuclear facilities when all the nuclear fuel and other radioactively contaminated elements have been definitively removed from the site of the facility.

- ✓ Irradiated nuclear fuel reprocessing facilities, as well as facilities designed for any of the following purposes: the production or enrichment of nuclear fuel, the management of spent nuclear fuel or high level waste, the definitive disposal of spent nuclear fuel, exclusively the definitive disposal of radioactive waste and exclusively the storage (projected for period of more than ten years) of spent nuclear fuels or radioactive waste at a place other than that in which they are produced.

Regulation (EC) No. 06/2006, of the European Parliament and Council, of December 18th 2006, establishing standards for the participation of companies, research centres and universities in the actions of the Seventh Framework Programme and standards for the diffusion of research results (2007-2013)

The aim of this Regulation is to strengthen industrial competitiveness, supporting research of the highest level of quality, and for this purpose it establishes standards for financing and subsidies, with energy being one of the areas selected for Community action. Also regulated are rights of access to the know-how acquired and the exploitation of the industrial property generated as a result of such actions.

Council Directive 2006/117/EURATOM, of November 20th 2006, relating to the surveillance and control of radioactive waste and spent nuclear fuel transfers

This EURATOM Directive establishes a Community system for the surveillance and control of cross-border transfers of radioactive waste and spent fuel, in order to guarantee suitable protection of the population. This shall be applied whenever the country of origin, the country of destination or any country of transit is a Member State of the Community and as long as the quantities and concentration involved in the transport operation exceed the levels established in article 3, section 2, letters a) and b) of Directive 96/29/EURATOM.

It is not applicable to the transfer of disused sources to a supplier or manufacturer of radioactive sources or to a recognised facility, or to radioactive materials recovered by reprocessing for reuse. Neither is it applicable to the transfer of wastes containing only natural radioactive material not resulting from practices.

The Directive gives the Member States until December 25th 2008 to transpose the provisions of the directive to their respective internal legislations.

19.2. Novelties in the facilities authorisation system

The system for the authorisation of nuclear and radioactive facilities continues to be essentially the same as that used to date and which is described in detail in Annex B. Nevertheless, during the period of the report a series of changes has been introduced. The main novelties as regards the system for the authorisation of nuclear and radioactive facilities are a result of the changes that have been made in the legislation during the period of the report.

As regards the nuclear sector specifically, these novelties fundamentally affect the changes to the Nuclear Energy Act, Law 25/1964, which has been modified on several occasions, and in the Regulation on Nuclear and Radioactive Facilities, approved by Royal Decree 1836/1999, of December 3rd and recently modified by Royal Decree 35/2008, of January 18th.

Articles 28, 29 and 30 of Law 25/1964 have been reworded through Law 24/2005, of November 18th, on reforms to promote productivity, with a view to clarify certain aspects regarding the arrangements for and transfer of authorisations for nuclear and radioactive facilities. Specifically:

- ✓ The new wording of article 28 establishes the obligation to hear the Autonomous Communities prior to granting authorisations for facilities, in accordance with the procedure regulated in the regulatory developments performed for this purpose (this having been taken into account in the recent revision of the Regulation on Nuclear and Radioactive Facilities), maintaining the binding nature of the reports issued by the Nuclear Safety Council.
- ✓ The new wording of article 29 clarifies the role of the Nuclear Safety Council as regards the surveillance of nuclear and radioactive facilities during each phase of their service lifetimes, in accordance with the authorisations in force.
- ✓ Finally, article 30 establishes the obligation to hear the Autonomous Communities with competences in relation to land planning and the environment prior to the transfer of authorisations for nuclear facilities, maintaining the binding nature of the reports issued by the Nuclear Safety Council.

Furthermore, the aforementioned Royal Decree 35/2008, of January 18th, introduces substantial changes in the previous 1999 Regulation on Nuclear and Radioactive Facilities. The modifications made reflect improvements deriving from the experience acquired in its application during this period, as well as the legal mandates introduced in the recent standard. These changes are described in detail in section 20.3 of the Report.

In addition, and in accordance with the General Radioactive Waste Plan, the process of selecting a site for a Centralised Temporary Storage (CTS) facility for spent fuel and high level waste has been initiated. Although the procedure for authorising this facility should be governed by the general system applicable to nuclear facilities, Royal Decree 775/2006, of June 23rd, creates an Interministerial Commission to establish the criteria to be met by the site of the CTS facility. The content of this Royal Decree is also described in section 20.3 of the Report, which deals with the Government standards of regulatory rank.

19.3. Nuclear and radioactive facility inspection and assessment system

Law 15/1980, of April 22nd, creating the CSN, modified by Law 33/2007, of November 7th, establishes the functions of this Organisation as the guarantor of nuclear safety and radiological protection. Among these functions is the inspection of nuclear and radioactive facilities during the phases from design to decommissioning, the CSN being responsible during this last phase for the inspection of the plans, programmes and projects required for the management of radioactive waste. The inspection activities have not been modified with the new Law, which introduces as a novelty in this area collaboration with the competent authorities in the performance of the inspections of nuclear safeguards deriving from the commitments of the Spanish State.

For the performance of their function, the CSN inspectors have authority to access facilities and their documentation, as well as for performance of the tests they consider to be necessary in exercising their tasks, recording the results of their activities in the corresponding inspection report. During the exercising of this function they may suspend the operation of the facility or activity inspected for safety reasons.

These inspection activities are complemented with the assessment of the facilities, for which the CSN submits reports to the MITYC, as a step preliminary to the resolution to be adopted by the latter for the granting of authorisations for nuclear and radioactive facilities, as well as for all ac-

tivities relating to the handling, processing, storage and transport of nuclear and radioactive substances.

On July 28th 2006, the Plenary of the CSN agreed to publish the reports on the inspections performed by its inspectors as from August 1st of that year on the organisation's website, on conclusion of the administrative arrangements associated with such inspections. This agreement was in compliance with the mandate issued by Congress on June 29th 2005, which urged the CSN to improve its transparency and its processes of public communication, in particular implementing a system for the publication of inspection reports and of the technical reports to be issued by the Council prior to the granting of authorisations relating to nuclear matters, reports that have been published regularly via this same route.

In the reports published all data that might affect obligatory legal confidentiality have been removed, along with information that cannot be disclosed due to its being legally protected, because it affects the intimacy of persons, national defence and public security, commercial or industrial secrets or intellectual property rights or due to the existence of sanctions and disciplinary processes, among others.

19.4. System of sanctions relating to nuclear facilities

The system of sanctions relating to nuclear energy, established in Chapter XIV (articles 85 to 92) of Law 25/1964, has been integrally revised through the promulgation of Law 33/2007, mainly in order to clarify and improve the description of the events that constitute infringements, increase the monetary scope of the sanctions and revise certain of the applicable technical criteria for qualification of the sanctions and specific aspects of the procedure governing the administrative treatment of sanctions proceedings.

The main aspects of the new system of sanctions may be summarised as follows:

a) The responsibility for infringements is attributed to the licensee of the facility or the person responsible for surveillance and control of the activity, without prejudice to the civil, penal or other liabilities that might exist.

b) The catalogue of infringements is extended considerably with respect to the previous system, although they continue to be classified in three categories: very serious, serious and slight.

   The supposed cases of infringement cover a wide range of non-compliances relating to nuclear safety, radiological protection, security, nuclear safeguards and civil liability for nuclear damage, the following warranting mention within the scope of application of the Convention: the unavailability of the systems required for radioactive waste management and the controlled emission of effluents and the non adoption of the measures required for the safe disposal of radioactive materials encountered in situations beyond control.

c) As regards the classification of infringements as very serious, serious and slight, the criteria used to determine in which of the three categories the infringements committed should be included have changed substantially. In this respect, consideration is given to the existence or otherwise of serious danger, serious damage or damage of little importance for the safety and health of persons. These concepts are defined in the NEA.

d) Graduation. The list of attenuating or aggravating circumstances to be taken into account with a view to satisfying the principle of proportionality of the sanctions and that determine the economic value of the sanction to be imposed has been revised and includes new cases.

e) Sanctions. The economic amounts have been increased substantially with respect to the previous system.

Although the casuistry established is very extensive, table 9 serves as a guideline and summarises the level of the applicable sanctions, taking into account on the one hand the seriousness of the infringements and, on the other, the type of facility or practice.

Table 9.

Sanctioning Body	Category	Nuclear Power Plants (M€)	Other Nuclear Installations (ONI) (M€)	Transport (Wastes and Nuclear Materials)	Radioactive Facilities (1st) Non-nuclear Transport	Radioactive Facilities (2nd, 3rd) Radiological Services (€)
Council of Ministers	Very serious	9-30	3-10	2/3 * ONI	1/3 * ONI	150,000-600,000
Ministry of Industry, Tourism and Trade	Serious	0.3-9	0.1-3	2/3 * ONI	1/3 * ONI	6,000-150,000
Directorate General for Energy Policy and Mines	Slight	0.15-0.3	0.012-0.1	2/3 * ONI	1/3 * ONI	1,200-6,000

f) Other measures. It is possible, in agreement with the MITYC, that the sanctions proceedings imply the immediate confiscation of the radioactive materials, including nuclear fuel, in the power of the facility or activity, as well as the prohibition to acquire new such materials until such time as the causes underlying such confiscation have disappeared.

g) The Procedure adhered to is in keeping, generally, with the principles established in Law 30/1992, of November 26th, on the Legal Regime of the Public Administrations and Common Administrative Procedure, as well as with the requirements of Royal Decree 1398/1993, of August 4th, approving the procedure for exercising of sanctioning powers. Nevertheless, the Law contemplates a series of specialities specific to the legal framework governing nuclear energy.

The CSN is responsible for initiating sanctions proceedings with respect to events that might constitute infringements in relation to nuclear safety, radiological protection and security, and is required to inform the corresponding body – the Directorate General for Energy Policy and Mines of the MITYC – of the initiation of the corresponding proceedings. When sanctions proceedings have been initiated in relation to such matters and are not the result of a proposal by the CSN, or when they result from such proposals but entail data other than those provided by the CSN, the CSN shall issue a report within 3 months for adequate qualification of the events.

The maximum period for the management and notification of the proceedings by the sanctioning body is 1 year, and it is possible for this period to be suspended, for up to three months, when the CSN is required to issue a report after the procedure has been initiated.

As an alternative to proposing the initiation of sanctions proceedings, the CSN may warn the licensee of the activity and require that appropriate corrective measures be taken, in certain cases. The CSN is also empowered to apply coercive fines against those infringers who do not respond to its requirements.

Regardless of the sanction that might correspond to the infringement, the CSN may issue a written reprimand to the physical person that, as a result of gross negligence, is responsible for a bad practice that has given rise to the material committing of the infringement.

h) The competence to impose sanctions within the Central Administration is as shown in the previous table. Those Autonomous Communities that have transferred to them functions corresponding to the MITYC in relation to 2nd and 3rd category radioactive facilities shall adhere to the requirements of their own standards.

i) The precautionary measures that might be agreed to by the organisation having the competence to impose sanctions, in response to a proposal by the CSN, include corrective measures, the sealing off of apparatus or equipment, the confiscation of materials or equipment and the partial or total suspension of the operation of facilities or activities.

j) The term of expiry of infringements and sanctions, which has not changed with respect to the previous system, is 5 years for very serious infringements, 3 years for serious infringements and 1 year for slight infringements.

19.5. Assignment of responsibilities

The assignment of functions and responsibilities within the legal system applicable to nuclear energy continues to be essentially the same as existed previously, as described in Section A of this report. Nevertheless, during 2005 important changes were made in the legislative framework in order to reinforce certain aspects and to expressly reflect in the standards responsibilities that in fact were attributed to the operators.

The competences and functions of the MITYC in relation to nuclear energy have not altered during the period of the report, and continue to be those contemplated in the legal framework in force as of the date of the previous report, as is reflected in Royal Decree 1554/2004, of June 25th, establishing the structure of the aforementioned Ministry. Recently, Royal Decree 438/2008, of April 14th, has approved the basic structure of the ministerial departments, although the Secretariat General for Energy has not undergone any change.

With regard to the Nuclear Safety Council, its competences and functions have not been substantially modified as regards their general aspects, with the exception of certain novelties that have been introduced in the Law by which it was created through the reforming Law 33/2007, as set out in article 20.1 of this Report.

Finally, as regards waste management, the responsibilities attributed to the Empresa Nacional de Residuos Radiactivos S.A., continue to be those established in Royal Decree 1349/2003, which relate to the management of radioactive wastes in all their forms, including the dismantling and decommissioning of nuclear and radioactive facilities and related activities, such as management of the Fund for the financing of the GRWP, the performance of research and devel-

opment plans, the establishment of systems for waste collection, transfer and transport, the performance of technical and economic studies and action in the event of nuclear and radiological emergencies, in support of the competent authorities.

19.6. Assessment of compliance

During the period of the report there have been numerous changes in the legal and regulatory framework relating to nuclear energy. These have significantly updated and reinforced it on the basis of the experience acquired in its application, thus reflecting the transformations that have occurred in society, with increasing social awareness in terms of a greater demand for transparency and protection of the environment. Especially significant are the changes that have been incorporated in the Nuclear Energy Act, particularly in relation to the revision of the system of sanctions and the important reform of the Law creating the Nuclear Safety Council.

Furthermore, as regards specifically radioactive waste management, including the dismantling and decommissioning of nuclear and radioactive facilities, there has been a modification of the procedure regulating transfers to the Fund for the financing of activities included in the GRWP, and radioactive waste management has been established as an essential public service.

In conclusion, the legal and regulatory framework for radioactive waste management, including the dismantling and decommissioning of nuclear and radioactive facilities, which already fully met the obligations of the Convention, has continued to be strengthened during this period, as a result of which compliance with the said obligations may be said to have improved.

Article 20
Regulatory body

Art. 20 Regulatory body

1. *Each Contracting Party shall establish or designate a regulatory body entrusted with the implementation of the legislative and regulatory framework referred to in Article 19, and provided with adequate authority, competence and financial and human resources to fulfill its assigned responsibilities.*
2. *Each Contracting Party, in accordance with its legislative and regulatory framework, shall take the appropriate steps to ensure the effective independence of the regulatory functions from other functions where organizations are involved in both spent fuel or radioactive waste management and in their regulation.*

In Spain the regulatory function in the area of nuclear energy corresponds to several different authorities with differentiated and separated competences and functions depending on the subject, in accordance with the provisions of the legislation in force. The most relevant authorities in the areas included within the scope of application of the Convention are as follows:

- ✓ **The Government**, responsible for defining energy and radioactive waste management policy and for issuing regulatory standards in response to proposals by the ministries competent in each different area.
- ✓ **The Ministry of Industry, Tourism and Trade** (MITYC), which is the ministerial Department of the Central State Administration responsible for granting, modify-

ing, suspending or cancelling authorisations for nuclear and radioactive facilities[1], subject to the mandatory and, where appropriate, binding[2] reports from the Nuclear Safety Council (CSN) in relation to nuclear safety and radiological protection, as well as to the reports to be issued by other Departments or Bodies of the Central Administration in other areas and in accordance with the requirements of their specific standards[3]. This Ministry is also responsible for submitting regulatory proposals for the development of the legislation in force to the Government, for adopting provisions enacting Government regulations and for applying the system of sanctions in relation to nuclear energy.

- ✓ The Governments of the **Autonomous Communities** to which have been transferred executive functions attributed to the MITYC, by virtue of a legal provision[4].
- ✓ **The Nuclear Safety Council (CSN),** which in accordance with the law by which it was created, Law 15/1980, of April 25th, modified by the new Law 33/2007, is the sole State organisation having competence in relation to nuclear safety and radiological protection, an entity existing under Public Law and independent from the General State Administration, with its own legal standing and equity. It is also legally empowered to issue binding technical standards within its realm of competence, to propose the necessary regulations to the Government and to propose the initiation of sanctions proceedings against those infringing the legal system, being expressly empowered in this respect to issue warnings to the licensees of regulated facilities and, where appropriate, impose coercive fines.

In exercising the competences and functions established in the legislation, the CSN needs to maintain relations with the Parliament (Congress and Senate) and the Government, as well as with the competent ministerial departments of the latter and the Governments of the Autonomous Communities.

As regards relations with the Parliament, the competent Commission of the Congress tracks CSN matters, either through the periodic appearances made in response to requests by the Congress or those requested by the CSN to inform on relevant issues. The Commission may also require the appearance of other public authorities or entities linked to nuclear energy. As a result of these appearances, the Congress may, on proposal by the Commission, urge the Government, the MITYC or the CSN, depending on the matter in hand, to establish certain measures or initiate proceedings. Analogously, the CSN appears before the competent Commission of the Senate, on request by the said institution or on its own initiative, to report on matters included within its realm of competence.

Furthermore, the CSN maintains relations with the Government, fundamentally through the MITYC (in accordance with Royal Decree 1554/2004, of June 25th), on all matters relating to regulation of the different phases of site selection, construction, start-up, operation and dismantling of nuclear and radioactive facilities. This relation is entirely instrumental in nature, and the

[1] In the case of 2nd and 3rd category radioactive facilities, the Autonomous Communities are responsible for exercising the executive functions of the MITYC when such functions have been transferred to them by legal provision.

[2] The CSN reports are binding when negative, the conditions determined being binding when positive.

[3] The regulation of the security of nuclear materials is an issue shared by the MITYC, the Ministry of the Interior and the CSN, each of these institutions being responsible for exercising the functions included within its respective realm of competence. The regulation in force establishes that the MIR and the CSN shall submit reports to the MITYC prior to the latter's granting security authorisations.

[4] Specifically in the case of the Autonomous Communities of Catalonia, the Basque Country, the Balearic Islands, Murcia, Extremadura, Asturias, Madrid, Galicia, Cantabria, the Canary Islands, Ceuta, Navarra, Valencia, Castilla y León and La Rioja

MITYC is responsible for arrangements regarding the mandatory and binding reports issued by the CSN on nuclear safety and radiological protection matters prior to the granting of any type of authorisation for facilities, as well as proposals for regulatory developments and the initiation of sanctions proceedings.

The CSN also maintains relations with other ministerial departments, both for the better performance of its functions and for cooperation in areas of common interest. Apart from the MITYC, the main ministerial departments with which the CSN maintains relations are the following:

- ✓ Ministry of the Environment and Rural and Marine Environments: the CSN participates in the procedure for the declaration of environmental impact, as regards assessment of the environmental radiological impact of facilities potentially causing an impact of this type.
- ✓ Ministry of the Interior and Ministry of Defence, in relation to the management of emergencies and security.
- ✓ Ministry of Education, Social Policy and Sports, in relation to the training of secondary school teachers.
- ✓ Ministry of Public Health and Consumption: the CSN collaborates with the Ministry on issues relating to radiological protection (protection of patients, workers, the public and the environment).

It should also be pointed out that both the MITYC and the CSN maintain relations, in their respective areas of competence, with the Parliaments and Governments of the Autonomous Communities.

Firstly, and as regards the MITYC, the Spanish legislation contemplates the possibility of certain of the competences of the Central Administration being transferred to the Autonomous Communities. As has been pointed out above, several Autonomous Communities exercise executive functions originally attributed to the MITYC by the Regulation on Nuclear and Radioactive Facilities in relation to 2nd and 3rd category radioactive facilities. In addition, the MITYC is obliged to transfer to Autonomous Communities housing facilities or whose territory is part of the action zone of the Nuclear Emergency Plan the information presented in their requests for authorisation, and requests for transfer of authorisations, such that they may make the appropriate allegations.

Furthermore, as regards the CSN and in keeping with the provisions of Law 15/1980, in the wording given by Law 33/2007, the Council may assign to the Autonomous Communities the exercising of functions attributed to it, in accordance with the general criteria agreed to by the CSN for such exercising. These assignment agreements are without prejudice to the exercising of competences attributed to the CSN in the legislation, which shall remain under its responsibility. At present the CSN has function assignment agreements with the Autonomous Communities of Asturias, the Canary Islands, Catalonia, Galicia, the Balearic Islands, Murcia, Navarra, the Basque Country and Valencia. In addition, the CSN is required to submit an annual report on its activities to the Parliaments of those Autonomous Communities that have nuclear facilities in their territories. Finally, in accordance with this same Law, a representative of Autonomous Communities having nuclear facilities in their territory or having assignment agreements with the CSN shall be part of the Advisory Committee for public information and participation on nuclear safety and radiological protection.

It should be pointed out that, in addition to what is established by the legislation, the different Spanish authorities with responsibilities in relation to nuclear energy have a long tradition and culture of the fullest respect as regards the distribution of the competences and functions con-

templated in the legal system in force, particularly in relation to nuclear safety and radiological protection (which is the sole responsibility of the CSN), as well as of full collaboration and cooperation in the exercising these competences and functions.

20.1 Structure, competences and functions of the Ministry of Industry, Tourism and Trade

20.1.1 Organisational structure

The basic organisational structure of the ministerial departments of the Government currently in force was established by Royal Decree 553/2004, of April 17th, the following high-ranking bodies being assigned to the MITYC:

- ✓ The Secretariat General for Energy
- ✓ The Secretariat of State for Tourism and Trade
- ✓ The Secretariat of State for Telecommunications and the Information Society
- ✓ The Sub-secretariat for Industry, Tourism and Trade
- ✓ The Secretariat General for Industry

The basic organisational structure of the MITYC is set out in Royal Decree 1554/2004, of June 25th, which establishes that the Secretariat General for Energy is the governing body in energy matters and that, within this Secretariat the Directorate General for Energy Policy and Mines (DGPEyM) is the management body responsible for the functions detailed in the following section in the specific field of nuclear energy.

Within the DGPEyM, the Sub-directorate General for Nuclear Energy (SGEN) is responsible for the practical performance of these functions. In addition, the SGEN maintains relations with other management bodies and general services of the MITYC, integrated both inside and outside the Secretariat General for Energy, for the exercising of its functions, such as the Technical Secretariat General for the processing of legislative proposals, the Public Prosecutor's Office for legal advice and support and the Sub-directorate General for International Relations for relations with Spain's Permanent Representations before the International Organisations specialising in nuclear energy.

Section L, Annex F of this report includes an organisational flowchart of the MITYC, highlighting those bodies that have functions relating to the Convention attributed to them, along with a block diagram of the structure of the functional areas and services of the SGEN.

20.1.2 Competences and functions

In accordance with the current legal system, the MITYC is one of the authorities having competences and functions within the Spanish regulatory system in relation to energy, and more specifically in relation to nuclear energy. It should be pointed out that the Spanish electricity system is completely liberalised, as a result of which, and as has been indicated above, the Government's actions via MITYC are limited to the establishment of an indicative energy plan and the regulation of the different energy sectors. Consequently, the MITYC does not exercise any function as regards the promotion or use of nuclear energy.

In accordance with the provisions of Royal Decree 1554/2004, of June 25th, the MITYC exercises the following competences and functions included within the framework of the Joint Convention:

a) Granting of authorisations for nuclear and radioactive facilities.

b) Drawing up of standards and application of the system of sanctions.

c) Management of administrative records.

d) Definition of the radioactive waste management policy.

e) Contribution to the definition of the R&D policy.

f) Tracking of compliance with the international commitments subscribed by Spain in relation to nuclear energy, in particular as regards non-proliferation and civil liability for nuclear damage.

g) Relations with International Organisations specialising in nuclear energy.

In summary, these competences and functions are exercised in accordance with the following principles and practices:

a) Granting of authorisations for nuclear and radioactive facilities.

The MITYC is the body of the Central Administration responsible for the processing of all administrative applications relating to the authorisation of nuclear and radioactive facilities, except second and third category radioactive facilities located in Autonomous Communities having executive functions corresponding to the Central Administration transferred to them.

The authorisations are granted once all the competent authorities have expressed their favourable or unfavourable opinions in accordance with their internal standards. In the case of the CSN, this organisation's reports on nuclear safety and radiological protection are mandatory and also binding when negative in nature, or as regards the conditions established when positive, in which case the said conditions are incorporated in the authorisation and are binding upon the licensees of the authorisations. Furthermore, the CSN may issue complementary instructions directly to the licensees of authorisations in order to guarantee safety requirements and maintenance.

The CSN also reports on authorisations in relation to the security of the facilities, as well as on the security of activities required to comply with the standards on nuclear energy.

b) Drawing up of standards and application of the system of sanctions.

The MITYC is responsible for drawing up proposals for Government regulations enacting laws on nuclear energy, as well as for bills submitted by the Government to Parliament for the necessary arrangements.

These legal developments are governed by a complex administrative procedure that is established in Law 30/1992, which regulates the legal system of the Public Administrations and common administrative procedure, supplemented by standards relating specifically to nuclear energy. When the regulatory developments refer to nuclear safety or radiological protection, the CSN is responsible for making the proposals. In practice, when as a result of the area affected by the standard the issues regulated are within the responsibility not only of the MITYC but also other authorities, such as the CSN, a working group constituted by representatives of all the authorities concerned is set up to prepare the initial draft prior to the formal consideration of the proposal. Once the arrangements have started, the procedure contemplates an extensive series

of hearings with the stakeholders (including among others the operators, industry associations, social agents and interested non-governmental organisations), as well as requests for official reports from the CSN, the ministerial departments concerned, the Autonomous Communities and, when required by the provisions of the EURATOM Treaty, the European Commission. Once the comments received during the hearings and in the reports from the authorities consulted have been taken into account, the final draft proposal is sent once again to the ministerial departments responsible for economic and administrative matters and to the Council of State, which is the highest Government advisory body. The final version of the proposal, accompanied by the entire administrative file, is submitted to the Government for its approval, in the case of regulations, or for authorisation for it to be submitted to Parliament, in the case of bills.

With a view to adequately coordinating and planning the preparation of proposals regarding Government regulatory developments affecting matters within the realm of competence of the CSN, the latter has set up a Standards Development Committee that includes a representative of the Ministry of Industry, Tourism and Trade. This Committee deals with the drawing up and planning of internal CSN standards and of proposals to be dealt with via the MITYC.

The MITYC is responsible for applying the system of sanctions established by the Nuclear Energy Act, Law 25/1964, of April 29th, for infringements committed within the scope of the State Administration. The procedure adhered to is based on the principles of Law 30/1992 and on Royal Decree1398/1993, except as regards the specific provisions of Law 25/1964. The CSN is legally empowered to propose to the MITYC the initiation of sanctions proceedings in relation to nuclear safety, radiological protection and security of nuclear and radioactive facilities. For this purpose it is required to report on the events to the Directorate General for Energy Policy and Mines of the MITYC by means of a report describing the events constituting the alleged infringement and the relevant circumstances necessary to adequately qualify the facts. On reception of the proposal the Directorate General for Energy Policy and Mines appoints an instructor for the case, who has the independence required to undertake the proceedings, and a secretary. The proceedings contemplate various phases of initiation, requests for allegations from the stakeholders, compilation and study of evidence and hearings. On completion of the process, the instructor draws up a proposal for resolution of the sanctions proceedings, which he submits to the competent sanctioning authority depending on the qualification of the sanction proposed.

Alternatively to the initiation of sanctions proceedings as established in the previous paragraph, the CSN is also empowered by Law 25/1964 to issue warnings to infringers, and to impose coercive fines of up to 20% of the value of the sanction foreseen by the sanctions system for the infringement in question.

Both the sanctions imposed by the sanctioning authorities, as established in Law 25/1964, and the warnings and coercive fines imposed by the CSN are open to appeal in accordance with the provisions of Law 30/1992 and, where appropriate, before the Court of Contentious-Administrative Procedure in accordance with Law 29/1998, of July 14th, regulating this particular jurisdiction.

c) Management of administrative records.

The MITYC manages a series of administrative records relating to the transport of nuclear and radioactive materials, radioactive facilities, activities relating to the commercialisation of radioactive materials and devices, etc.

d) Definition of the radioactive waste management policy.

The Government policy in relation to radioactive waste management is established in the General Radioactive Waste Plan (GRWP), which is a document that contemplates the inventories of radioactive waste to be managed, the actions necessary for this purpose and the technical solutions, as well as the economic and financial forecasts for performance.

The first GRWP was approved in 1987, the plan currently in force being the 6th GRWP, approved by the Cabinet on June 23rd 2006.

In accordance with the legislation in force, more specifically the provisions of Royal Decree 1349/2003, on the ordering of ENRESA's activities and their financing, this company is responsible for drawing up a proposal for the GRWP and for submitting it to the MITYC for processing and submittal to the Government for approval.

The GRWP is revised every four years and when so required by the MITYC when circumstances make it necessary. The procedure for processing of the GRWP contemplates consultations with the NRC and the Autonomous Communities and a lengthy process of hearings with the stakeholders (including among others the operators, industry associations, social agents and interested non-governmental organisations). A significant novelty in the arrangements for the 6th GRWP was its publication on the MITYC website for comments from the general public. After considering the comments and allegations received, the MITYC submits the proposal to the Cabinet for its approval and subsequently informs Parliament.

In addition, during the first half of each year ENRESA is required to submit to the MITYC a report on its activities during the previous year and an updated economic-financial study of the cost of the activities included in the GRWP. Also, prior to November 30th of each year it has to draw up a technical-economic justification of the budget for the coming year and forecasts for the three following years.

e) Contribution to the definition of the R&D policy.

The MITYC's functions do not include the performance of R&D projects in relation to energy. Nevertheless, it is required to contribute, in coordination with the Ministry of Education and Science (MEC), to defining the national research and development policy in relation to energy matters, and in particular to nuclear energy.

For this purpose, and on the initiative of the MITYC, a Strategic Nuclear Energy R&D Committee (CEIDEN) has been set up, the aim of which is to bring together on one same platform all the agents associated with the nuclear energy sector including, in addition to the MITYC itself and the CSN, universities and research centres, operators and industry associations, in order to identify synergies and points of common interest in the research programmes and activities carried out by the latter. This instrument is of use for identification of the priority areas of research to ensure the safe and efficient operation of the Spanish nuclear fleet and to promote such activities, which in any case are to be financed via the resources of the agents specifically involved in them.

The CEIDEN currently includes 45 represented entities. Its governing bodies are the General Assembly and a Management Board, the latter being made up of 15 representatives from the following entities: MITYC (1), MEC (1), CSN (2), research centres (2), universities (1), fuel cycle companies (2), electricity utilities with nuclear assets (3), equipment goods companies (1), engineering companies (1) and service companies (1). The MITYC currently occupies the presidency of the CEIDEN.

f) Tracking of agreements and treaties

Spain has subscribed to the complete set of international agreements and treaties in relation to the peaceful use of nuclear energy. The MITYC has been assigned the function of tracking these agreements and treaties within its realm of competence.

In particular, the MITYC monitors compliance with the obligations of the following international agreements in areas relating to the Joint Convention:

- Joint Convention, the MITYC acts as the national point of contact and coordinates the drawing up of the national reports for the Review Meetings.
- Convention on Nuclear Safety, the MITYC cooperates with the CSN in drawing up the national reports.
- Paris and Brussels Agreements on civil liability for nuclear damage, the MITYC is responsible for the drawing up and application of the national standards in this area.

It is also responsible for the monitoring and application of agreements regarding safeguards (EURATOM Treaty and Treaty on the Non-Proliferation of Nuclear Weapons) and in relation to the security of nuclear materials and facilities, in this last case in coordination with the Ministry of the Interior and the CSN. As regards control of exports of dual use material, the MITYC is responsible for the application of the commitments contracted through the Secretariat of State for Overseas Trade (SECE). The SGEN provides technical support on nuclear energy issues to the Interministerial Board for Defence and Dual Use Materials, which is the organisation in charge of submitting mandatory reports to the SECE prior to the granting of authorisations for the import or export of dual use materials subject to authorisation.

Finally, the MITYC is also responsible for the tracking of the bilateral agreements between Spain and other countries in the area of the peaceful use of nuclear energy.

g) Relations with international organisations.

The MITYC participates actively in the forums and committees established within the framework of International Organisations specialising in nuclear energy, through the SGEN. The SGEN has an area in charge of coordinating its participation in international nuclear energy forums.

As regards the EURATOM Treaty, the MITYC provides support for the Spanish representation before the EU in the Council group in charge of nuclear issues, as well as in all other areas of application of the Treaty included within its realm of competence. In addition it is represented in the following committees and working groups:

- High Level Group on Nuclear Safety and Waste Management
- Committee of the Instrument for Cooperation in Nuclear Safety
- Committee on Assistance Programmes for Nuclear Dismantling
- Advisory Committee of the European Supply Agency
- Advisory Committee of the Fission Framework Programme

Within the framework of the IAEA, the MITYC is part of the Spanish delegation before the General Conference and provide support for the Spanish Representation before the IAEA in areas within its realm of competence.

Within the framework of the OECD Nuclear Energy Agency, the MITYC is part of the Spanish Delegation on its Management Committee and is represented on the Nuclear Law Committee and the Nuclear Developments Committee.

As regards the European Reconstruction and Development Bank, the MITYC is represented in the Assembly of Contributors to the Chernobyl Sarcophagus and in the Assemblies of Contributors to the Dismantling Aid Funds for the Ignalina, Kozloduy and Bohunice nuclear power plants.

The MITYC is also represented in the European Nuclear Energy Forum, as well as in other international forums associated with nuclear safeguards and the security of nuclear materials and facilities.

20.1.3 Human resources and training

The SGEN, which is the Sub-Directorate General responsible for performance of the functions of the MITYC in relation to nuclear energy, is manned entirely with civil servants belonging to the different departments of the State Administration. The normal system for access to jobs in the different units of the MITYC, including the SGEN, included in the offer of public sector employment, is via an examination followed by a selective training course. In addition, jobs may be covered within the SGEN by the transfer of civil servants from other areas of the General State Administration, as long as the functions from which such workers are transferred are compatible with those required for the vacancies to be covered in the MITYC.

At present the SGEN provides 21 jobs. Of the civil servants currently belonging to the SGEN, 89% have a university background, most of them being industrial engineers belonging to the State Corps of Industrial Engineers, although there are also others with different academic backgrounds, such as physicists, mining engineers, forestry experts and graduates in law. The distribution of the workforce in terms of knowledge and experience of administrative matters and nuclear technology is balanced and in keeping with the needs of the service.

The budget of the Directorate General for Energy Policy and Mines, which is the management organisation to which the SGEN belongs, is integrated in the General State Budget, in the same way as that of any other organisational unit of the Ministerial Departments of the Central State Administration.

The training programme for the personnel of the SGEN is integrated in the general training plan of the MITYC, which contemplates both training on technical issues relating to energy and on administrative, legal and economic matters.

20.1.4 Internal quality assurance

The directives for the performance of many of the functions of the SGEN are established directly in the internal standards regulating the general administrative procedures, as well as those dealing specifically with nuclear energy, particularly as regards the drawing up of standards and the initiation of sanctions proceedings.

Additionally, the SGEN has drawn up internal procedures for management of the operation of its services in those areas in which there are no directives in the legislation or when it is appropriate to detail or extend the practices in use in order to guarantee their correct implementation. These procedures are revised periodically in order to reflect the experience acquired and the changes introduced in national standards or international obligations.

20.2 Structure, competences and functions of the Nuclear Safety Council (CSN)

20.2.1. Organisational structure of the CSN

The first final provision of Law 33/2007, of November 7th, reforming Law 15/1980 by which the Nuclear Safety Council was created, establishes the mandate of the Government for approval of the modification of the CSN Charter (Royal Decree 1157/1982, of April 30th). At present, and in accordance with its Law and Charter, the organisational structure of the CSN is as follows:

- ✓ President
- ✓ 4 Counsellors, one being the Vice-President.
- ✓ Secretariat General, to which report the following:
  - ➪ The Technical Directorate for Nuclear Safety and Sub-Directorates General reporting to it.
  - ➪ The Technical Directorate for Radiological Protection and Sub-Directorates General reporting to it.
  - ➪ The following Sub-Directorates General:
    - Sub-Directorate General for Planning, Information Systems and Quality.
    - Sub-Directorate General for Personnel and Administration.
    - Sub-Directorate General for Legal Advisory Services.
- ✓ The following Offices:
  - ➪ Inspection Office.
  - ➪ R&D Office.
  - ➪ Technical Standards Office.

Section L, annex F of this report includes an organisational flowchart of the CSN.

The Plenary of the CSN, formed by the President and the Counsellors, is the organisation's collegiate governing body and adopts the agreements by which the CSN is ruled. The Government and the Parliament intervene in the procedure of appointing and replacing the members of the Plenary. Both the Plenary of the CSN and the Presidency are governed by the principle of competence and there is no hierarchical subordination between them.

The Plenary is assisted by a Secretariat General to which report the two following Technical Directorates, among other units:

- ✓ The Technical Directorate for Nuclear Safety brings together all the functions relating to the safety of the nuclear facilities, except those of low and intermediate level radioactive waste disposal, which were transferred to the Technical Directorate for Radiological Protection. It is also responsible for safety in the transport of nuclear substances and radioactive materials. Three Sub-directorates General report to the Technical Directorate for Nuclear Safety: Nuclear Facilities, Nuclear Technology and Engineering.
- ✓ In addition to the inspection and control of radioactive facilities, the radiological protection of the workers and the management of low and intermediate level radioactive waste, the Technical Directorate for Radiological Protection is responsible for the radiological protection of the public and the environment and for radiologi-

cal emergencies. Three Sub-directorates General report to this Technical Directorate: Environmental Radiological Protection, Operational Radiological Protection and Emergencies.

In accordance with the Law by which the Nuclear Safety Council was created and with its Charter, in December 2006 both the Presidency of the Organisation and three of its counsellors were renewed, this also occurring in March 2007 in relation to the post of Secretary General. Certain of the provisions of the new Law 33/2007, reforming Law 15/1980 by which the Nuclear Safety Council was created, will be enacted by way of the new Charter of the CSN, which will affect the internal organisation of the Council described in this section.

20.2.2. Competences and functions of the CSN

The CSN is an Entity existing under Public Law with its own legal standing and equity and is independent from the General Administration of the State. It is the sole body responsible for nuclear safety and radiological protection in Spain.

As regards the scope of the Convention, the functions of the CSN, which are set out in article 2 of the law by which it was created, Law 15/1980, reworded by the new Law 33/2007, are as follows:

a) It issues mandatory reports to the Ministry of Industry, Tourism and Trade in relation to authorisations for nuclear and radioactive facilities, the latter being responsible for decisions regarding the granting of authorisations in general, and in particular for all activities relating to the handling, processing, storage and transport of nuclear and radioactive substances. It will also issue reports prior to those resolutions that the MITYC may, in exceptional cases and circumstances, dictate in relation to the safe removal and management of radioactive materials. As regards radioactive waste, the CSN reports to the MITYC on the concentrations or levels of activity of materials containing or incorporating radioactive substances, and for which no further use is foreseen, for their consideration as such.

b) It proposes to the Government the necessary regulations in its realm of competence and also draws up and approves technical Instructions, Guides and Circulars in relation to nuclear safety and radiological protection.

c) It proposes the initiation of sanctions proceedings within its realm of competence. Likewise, the Council will issue a mandatory report within a period of 3 months for adequate qualification of the facts when sanctions proceedings relating to nuclear safety, radiological protection or security have been initiated by some other Organisation or in response to a justified request by the CSN itself and include data additional to those provided by the latter. The sanctions shall be imposed by the competent executive body of the Central Government or of the Governments of the Autonomous Communities.

   The CSN is also empowered to issue warnings to the licensees and propose corrective measures and, where appropriate, apply coercive fines.

d) The CSN undertakes the surveillance and control of nuclear and radioactive facilities, inspecting and controlling such installations throughout all the phases of their lifetime, inspecting the transport, manufacturing and homologation of equipment containing radioactive sources or generating ionising radiations and approving or validating packages to be used for the transport of radioactive substances.

   It also maintains surveillance and control over the radiation doses received by the operating personnel and off-site releases of radioactive materials from nuclear and ra-

dioactive facilities, as well as the specific or cumulative effects of such releases on the areas of influence of these installations.

e) The CSN performs studies, assessments and inspections of the plans, programmes and projects required for all phases of radioactive waste management, including new designs.

f) It maintains official relations with similar organisations in other countries and participates in international organisations with competences in the fields of nuclear safety or radiological protection, advising the Government with respect to commitments with these organisations or with other countries. Given their relevance within the scope of the Convention, these international relations are briefly described in the next sub-section.

g) The CSN informs the public on matters for which it is responsible, without prejudice to the announcement of its administrative activities in the legally established terms.

   The new Law reinforces the rights to public information and participation in relation to matters within the realm of competence of the Council. The CSN is obliged to inform the public of all relevant events at nuclear and radioactive facilities; the reports issued by it and the minutes of inspections performed are made public and a procedure is established for public information during the drawing up of CSN Technical Instructions and Guides. In addition, an Advisory Committee is set up for public information and participation on nuclear safety and radiological protection, the aim being not only to improve such public information and participation but also transparency in the management of the CSN and in its decision-making.

h) It collaborates with the competent authorities in the drawing up of criteria to be met by the off-site emergency plans and security plans of nuclear and radioactive facilities.

   It coordinates emergency situation support and response measures in all aspects relating to nuclear safety and radiological protection.

   It inspects, assesses, controls, proposes and adopts whatever prevention and correction measures might be required in the face of exceptional situations or situations of nuclear or radiological emergency when these arise in relation to facilities, equipment, companies or activities not subject to the system of authorisations of the nuclear legislation.

i) It establishes and monitors research plans relating to nuclear safety and radiological protection.

j) It files and takes custody of the documentation to be submitted to the Nuclear Safety Council by the licensees of operating permits for nuclear facilities on the definitive shutdown of practices and prior to the transfer of ownership and granting of the dismantling permit.

20.2.3. International relations of the CSN

International relations play a fundamental role in the functions assigned to the CSN by the national legal system in force. The CSN's international activities are carried out on two different planes: multilateral, via international organisations, institutions and forums, and bilateral, through agreements with counterpart institutions.

a.1) The main activity as regards multilateral international relations consists of the CSN's participation in the governing bodies, committees and working groups of various International Organisations:

- International Atomic Energy Agency (IAEA). The CSN participates actively in the activities of the IAEA and is part of the Spanish Delegation to its General Conference. It also participates on numerous technical and advisory committees and working groups.
- European Union (EU). Relations with the EU are particularly important for Spain, especially as regards activities deriving from the EURATOM Treaty, for which the CSN provides representatives for the advisory committees on several of its articles. Furthermore, the CSN assists the Spanish Permanent Representation on issues relating to nuclear safety and radiological protection and participates in the activities of the Atomic Questions Group (AQG) of the Council in which such issues are dealt with. Within the framework of the European Union the CSN also participates in the European High Level Group on Nuclear Safety and Radioactive Waste Management (where it occupies the deputy chair of the working group on Transparency and Communication) and on the Committee of the Regulatory Assistance Management Group (RAMG), providing advice to the Commission on regulatory assistance projects funded by Community instruments.
- Nuclear Energy Agency (NEA/OECD). The CSN is part of the Spanish Delegation to the NEA Management Committee and participates actively on the agency's technical committees and in most of its working groups. Likewise, the CSN is part of numerous international research and development projects and programmes coordinated by the NEA, and collaborates in the development and management of International Databases.

During this period the CSN has participated in activities relating to compliance with Spain's commitments as a contracting party to the following international Conventions:

- Convention on Nuclear Safety: the CSN acts as a national point of contact and coordinates the drawing up of the national reports for Review Meetings.
- Joint Convention: the CSN cooperates with the MITYC in the drawing up of national reports.
- Convention on the Security of Nuclear Materials.
- OSPAR Convention: the CSN is a member of the Radioactive Substances Committee and prepares the periodic report on releases from nuclear facilities required by the Convention.
- Convention on the Prompt Notification of Nuclear Accidents.
- Convention on Mutual Assistance in the event of Nuclear Accidents or Radiological Emergencies.

a.2) Furthermore the CSN participates in associations made up of counterpart institutions, namely:

- The International Nuclear Regulators Association (INRA).
- The Western European Nuclear Regulators Association (WENRA).
- The Latin American Forum of Nuclear and Radiological Regulatory Organisations (FORO).

b) As regards bilateral relations, the CSN subscribes to agreements, protocols or conventions with organisations undertaking functions such as its own in 19 countries. These agreements with other countries provide an opportunity for the exchange of regulatory information and practices and, therefore, imply permanent and highly enriching cooperation in know-how and experience in the fields of nuclear safety, radiological protection and waste management. There are specific agreements with four countries:

- USA (US Nuclear Regulatory Commission, USNRC).
- Sweden (Swedish Nuclear Power Plant Inspectorate, SKI, and the Swedish Radiation Protection Authority, SSI).
- France (with the French regulatory body, ASN, and the Institute for Radiological Protection and Nuclear Safety, IRSN).
- Great Britain (with the British regulatory body, HSE, and the National Radiological Protection Board, NRPB).

Likewise, the CSN collaborates with international non-governmental institutions such as the International Commission for Radiological Protection (ICRP).

In 2006, the Spanish Government, via its Permanent Representation and urged by the CSN, requested that the IAEA perform an international IRRS (Integrated Regulatory Review Service) mission with a view to reviewing the situation of the legal and regulatory framework of nuclear energy in Spain, with reference to the Agency's standards and directives, and the structure, operation and practices of the CSN, as the sole body responsible for nuclear safety and radiological protection.

In order to adequately prepare for the mission, the Council initiated a self-assessment at the end of 2005, and in March 2006 the Plenary of the Council approved the final assessment report and subsequently the action plan, identifying the actions to be performed in order to satisfy the requirements of the IRRS mission. An analysis was then performed to define the initial actions to be taken, this allowing the most important processes for both the CSN strategy and the IRRS mission to be identified.

Throughout 2007 important efforts were made to prepare for the IRRS mission, which was held between January 28th and February 8th 2008. This was the first full-scope mission of its type to be performed, since it included aspects relating to security. Although the official report by the review team is still pending, the results of the mission may be said to have been highly satisfactory.

20.2.4. Human resources, training and financing of the CSN

✓ **Human resources**

The CSN, as the organisation in charge of a question such as nuclear safety and radiological protection, needs technical personnel specialising in this area. The technical personnel in question are civil servants belonging to the Technical Division of Nuclear Safety and Radiological Protection, as established in article 8 of the Law by which the CSN was created, in the wording given by Law 33/2007, access to which is gained by a competition-examination called by the CSN itself. In addition to such personnel, the Organisation also employs civil servants from other Divisions of the Public Administrations, temporary personnel and contract personnel.

As of December 31st 2007, and including the eight members of the upper management (president, four counsellors, secretary general and two technical directors),

the CSN workforce was made up of 453 people, of which 209 are civil servants belonging to the Technical Division of Nuclear Safety and Radiological Protection, in charge of the inspection, control and monitoring of the operation of the nuclear and radioactive facilities, 125 are civil servants from other Public Administrations, 26 are temporary office personnel and 85 are contracted.

The number of women employed by the CSN represents 49.88 % of the total workforce, and that of men the remaining 50.12%. The average age of the Organisation's personnel is 48 years.

As regards academic qualification, 65.12% of the personnel are post-graduates, 6.18% are graduates and 28.70% have other qualifications.

✓ **CSN personnel Training Plan**

The CSN Training Plan is configured as a working document deriving from the CSN Strategic Plan for 2005-2010, and as such as is at the service of the Council's training objectives.

The Plan for 2008 consists of a transition to the competence-based management model, on which work will begin as from this same year. Although it maintains the structure of previous years, the fact that it constitutes a transition implies that the plan incorporates certain changes.

The Plan, with a maximum cost of 826,082 Euros, includes a scheduled 158 courses with a total of 74,814 classroom hours and 1,966 trainees. The average time dedicated to training is 166 classroom hours/person, equivalent to 10% of the overall working timetable.

All training activities are grouped in six areas:

- Nuclear Safety.
- Radiological Protection.
- Development of management skills, organisation and communication.
- Standards, administration and management/prevention of occupational risk.
- Information systems and quality.
- Languages.

The overall balance for the three-year period 2005-2007 may be considered to have been positive, since the training programme for a group of people such as the CSN, which has remained practically constant in number, has allowed most of the general and specialist training objectives to be fulfilled.

During 2007 the training model implemented at the CSN was assessed, and it was agreed that a competence-based management model should be introduced. Among other objectives, this would allow the know-how, skills and aptitudes required for each job post to be identified, with a view to defining the training needs of those occupying such posts. This definition undoubtedly optimises the Training Plan. The CSN recognises that the technical qualification of the personnel should be a strategic objective of the Regulatory Body.

Likewise, the presence of the Council in national and international forums (congresses, meetings, seminars, etc.) relating to its functions and areas of competence continued to be promoted.

✓ **Finance**

The budgets for CSN expenses and income are integrated in the General State Budget, as a result of which their approval corresponds to Parliament. The two major items of the budget as regards income are, on the one hand, the tariffs, public prices and other revenues that the CSN receives as payment for its services and, on the other, the transfers made by the State.

a) The tariffs, public prices and other revenues are regulated by Law 14/1999, of May 4th, on Tariffs and Public Prices for services rendered by the Nuclear Safety Council. The following activities are financed by these tariffs:

- Performance of studies, reports and inspections prior to the authorisations for the operation and decommissioning of nuclear and radioactive facilities granted by the MITYC.
- Inspection and control of nuclear and radioactive facilities and related activities.
- Granting of licences for the personnel who are to operate or supervise the operation of nuclear and radioactive facilities.

Reports, tests or studies on new designs, methodologies, simulation models or verification protocols relating to nuclear safety or radiological protection are financed by way of public prices. In 2007, this financing item represented 80.17% of the total budget.

b) Transfers by the State. The CSN carries out controls of radiological protection measures in place to protect the general public and the environment. These functions are not covered by tariffs and prices but are funded from the General State Budget via the MITYC. The financing obtained in this manner constituted 12.06% of the total budget. The rest of the financing in 2007 (0.77%) corresponded fundamentally to income arising as a result of interests from bank accounts.

20.2.5. CSN Management System

It should be pointed out that the CSN drew up and approved a Strategic Plan covering the period 2005-2010, which sets out the Mission and Vision of the Organisation, summarises the analyses of the setting performed in preparing the Plan and establishes the results expected of the organisation. Also described are the strategies established (safety and protection, management and organisation and social credibility) and the associated objectives. Finally, the most significant activities to be carried out to achieve the objectives are described.

One of the activities carried out in preparing for the IRRS mission was the updating of the CSN's Management System to adapt it to the requirements of the IAEA, established in document GS-R-3, Management System for Facilities and Activities.

The analyses performed as part of the management manual review process pointed to the fact that a great many of the IAEA requirements were already explicitly or implicitly implemented in the CSN organisation. The requirements not implemented have been identified and their implementation has been planned. The system is expected to be fully operational within three years.

In 2007, 31,762 hours have been dedicated to planning and management, this implying approximately 7% of the total hours accounted for (432,865).

As of December 31st 2007 there were 161 procedures in force, 30 relating to management, 28 administrative and 103 technical.

20.3 Regulatory development

During the period covered by the report the Government approved several provisions of regulatory rank relating to nuclear energy and revised others, particularly significant among which was an extensive reform of the Regulation on Nuclear and Radioactive Facilities (RNRF), the standard that regulates the procedure of granting authorisations for such facilities, among other things.

The most relevant aspects of the new or revised regulatory provisions are underlined below:

1- Royal Decree 229/2006, of February 24TH, on the control of high activity encapsulated radioactive sources and orphan sources

This Royal Decree transposes Council Directive 2003/122/EURATOM, on the control of high activity sealed radioactive sources and orphan sources to the Spanish legal system. Its objective is to prevent the workers and the public from being exposed to ionising radiations as a result of inadequate control of high activity encapsulated radioactive sources or the possible existence of orphan sources[1].

The obligations deriving from this Royal Decree are complemented with those established in the RNRF in relation to authorisations and in the Regulation on the protection of health against ionising radiations (Royal Decree 783/2001, of July 6th) as regards standards relating to the protection of the health of the workers and the population against the risks posed by ionising radiations.

Among the most relevant issues mention may be made of the drawing up of a national inventory of owners of high activity radioactive sources, to be managed by the CSN, and of the imposition upon the owners of such sources of a series of obligations seeking to guarantee their safe management once in disuse, either through their return to the supplier or their transfer to another authorised owner or to a facility authorised for the long-term storage or disposal of sources. In order to ensure compliance with these obligations, the owner shall, prior to acquiring the sources, establish a financial guarantee to cover their final management. Finally, it is established that radioactive facilities using such sources shall report on the security measures contemplated to prevent, ensure the prompt detection of and avoid situations of loss, theft and non-authorised use or transfer.

2- Royal Decree 775/2006, of June 23RD, creating the Inter-ministerial Commission for the establishment of the criteria to be met by the centralised spent nuclear fuel and high level radioactive waste temporary storage facility and associated technology centre

The drawing up of this standard responds to a parliamentary initiative (Bill approved on April 27th 2006 by the Congressional Commission on Industry, Tourism and Trade) in relation to the creation of an Inter-ministerial Commission in charge of establishing the criteria to be met by a Centralised Temporary Storage (CTS) facility for spent nuclear fuel and high level wastes and its associated technology centre.

By means of this Royal Decree the Commission in charge of establishing the criteria to be met by a Centralised Temporary Storage (CTS) facility for spent nuclear fuel and high level wastes and

[1] *Sources that are not controlled, either because they have never been controlled or because such control has been lost as a result of loss, theft or abandonment.*

its associated technology centre was set up, this being integrated by representatives of the Ministry of Industry, Tourism and Trade, the Ministry of the Environment and Rural and Marine Environments, the Ministry of Economy and the Exchequer, the Ministries of Education, Social Affairs and Sport, the Ministry of Public Health and Consumption, the Ministry of Public Administrations and the Office of the President of the Government. In addition, a representative of the CSN attends the meetings of the Commission in order to provide advice on nuclear safety and radiological protection issues.

This Inter-ministerial Commission, which was constituted on July 7th 2006 and is presided over by the Secretary General of MITYC, has the following functions:

- ✓ To establish the reference framework with the technical, environmental and socio-economic conditions to be met by potential candidate sites for the CTS facility.
- ✓ To establish and promote the processes of public information and participation.
- ✓ To develop the procedure by which interested municipal areas may opt to be candidates for the site.
- ✓ To draw up, for submittal to the Government, a proposal with candidate sites selected from among the interested municipal areas, on the basis of the technical assessments of their suitability and taking into account the proposals made by the affected autonomous communities, where appropriate.

3- Royal Decree 1767/2007, of December 28th, determining the values to be applied in 2008 for the financing of the costs of radioactive waste and spent fuel management and of the dismantling and decommissioning of facilities

The activities of radioactive waste and spent fuel management and the dismantling and decommissioning of facilities are the responsibility of ENRESA. This Royal Decree determines the values to be applied in 2008 for the financing of the costs of such management. Also revised for this year are the charges and taxes for the determination of the fees established for the financing of ENRESA.

4- Royal Decree 35/2008, of January 18th, modifying the Regulation on Nuclear and Radioactive Facilities, approved by Royal Decree 1836/1999, of December 3rd

This Royal Decree, which is one of the pillars of the regulatory framework governing nuclear energy, has been widely revised by Royal Decree 35/2008, of January 18th, modifying the Regulation on Nuclear and Radioactive Facilities (RNRF), approved by Royal Decree 1836/1999.

The arrangements for the reform of the RNRF were conditioned by the approval of Law 33/2007 reforming the law by which the CSN was created, Law 15/1980, since certain of the new or reformed provisions of this Law, and of the Nuclear Energy Act, Law 25/1964, required regulatory developments for their implementation.

The scope of the revision affects 33 of the 81 articles making up the standard, as well as the second additional provision, relating to the procedure of environmental impact assessment, and Annexes I and II, relating respectively to the classification and exemption of facilities and to the approval of types of radioactive apparatus. In addition 4 new articles and a transitory provision have been introduced. The following are among the most relevant aspects:

✓ In relation to nuclear safety:

- Emphasis is laid on the effective exercising of the so-called "safety culture" by the licensees of the facilities.

- In developing the changes introduced in the law creating the CSN, Law 15/1980, by Law 33/2007, it is established that the licensee shall be responsible for setting up a procedure allowing the personnel of the facility, as well as that of contracted companies and external companies rendering services on site, to report on any deficiencies or malfunctions that, in their opinion, might affect nuclear or radiological safety.

- It is established that the competent Administrations shall, prior to granting any authorisation or significant modification for any non-nuclear facility that, in view of its characteristics and location, might cause an impact on the safety of existing nuclear and radioactive facilities, report to the CSN in order to ensure an exchange of information on the safety requirements that might be applicable.

✓ As regards the system for the granting of authorisations:

- It is established that the Ministry of Industry, Tourism and Trade shall be obliged to submit to those Autonomous Communities in whose territory there is a facility, or part of the planning zone foreseen in the basic standard on the planning of nuclear and radiological emergencies, the documentation submitted by the licensees in their requests for authorisation for the different phases of the lifetime of the facilities, such that they may present allegations within one month, thus enacting the requirements of the modification of the Nuclear Energy Act, Law 25/1964, via Law 24/2005, on reforms for the promotion of productivity.

- The content of the documentation required in the procedure for the authorisation of the dismantling and decommissioning of nuclear facilities is developed, taking into account the experience acquired in the dismantling of Vandellós I nuclear power plant and the preparatory activities for authorisation of the dismantling of José Cabrera nuclear power plant.

✓ The system of granting operator and supervisor licences is revised and developed.

✓ As regards the security of nuclear and radioactive materials and facilities, new requirements are included for the granting of the corresponding authorisations, in keeping with the growing concern regarding this issue at national and international level, special emphasis being laid on the obligation of nuclear and first category radioactive facilities to submit a Security Plan as part of the documentation accompanying requests for authorisation.

✓ As regards the nuclear power plant Information Committees, the number of members is increased in order to ensure the representation not only of the municipalities in which the facility is located but also of those included in Zone I of the Nuclear Emergency Plans and the Directorate General for Civil Defence, and also to allow other representatives appointed by the Ministry of Industry, Tourism and Trade to sit on this Committee, on the initiative of the said Ministry or in response to a proposal by the Committee itself.

20.4. Legislative Development of the CSN

The legislative capacity of the CSN is established in the law by which it was created, Law 15/1980, of April 22nd, in accordance with the wording given by Law 33/2007, of November 7th, which modifies the former. Article 2 empowers the CSN to propose to the Government the necessary regulations to govern nuclear safety and radiological protection issues, as well as whatever revisions it considers to be appropriate. Likewise, it may draw up and approve technical Instructions, Circulars and Guides in relation to nuclear and radioactive facilities and activities relating to nuclear safety and radiological protection.

Having recognised the CSN's powers to approve these technical standards, the new Law 33/2007 goes on to specifically define each such standard, detailing the characteristics already possessed by them. The Circulars and Guides are not dealt with in this section due to their being technical documents of an informative or recommendatory nature, but there is a reference to the **Instructions**, which are standards whose compliance is obligatory. These Instructions are technical standards on nuclear safety and radiological protection that are binding upon those included within their scope of application, following notification or, where appropriate, publishing in the Official State Gazette.

In drawing up such standards, the participation of the stakeholders and the public must be promoted, in the terms set out in Law 27/2006, of July 18th, regulating rights of access to information, public participation and access to justice in relation to environmental issues.

Prior to their approval, the Instructions must be submitted to the Congress. They are, therefore, the only binding standard that the CSN may issue by virtue of its direct legal powers and are directed either at a specific group or at an undetermined number of persons.

Since 2005, 12 new instructions have been published, the following affecting the scope of the Convention:

1. CSN INSTRUCTION IS-10, of June 25th 2006, establishing the criteria for the reporting of events to the CSN by the nuclear power plants.

   This determines the criteria that the CSN applies to require that the licensees of nuclear power plants report on events occurring at their facilities and that may affect nuclear safety or radiological protection. In this respect, the possible events are defined and the time period (1 hour or 24 hours) within which they are to be reported is determined, the corresponding sanctions being imposed for non-compliance.

2. CSN INSTRUCTION IS-13, of March 21st 2007, on radiological criteria for the release of nuclear facility sites.

   The fundamental objective of this instruction is to specify the radiological criteria to be fulfilled by the sites of nuclear facilities for them to be released from radiological regulatory control. The Instruction establishes that the effective dose to the individual representative of the critical group, as a result of the residual activity present on the terrain, once released, shall not exceed 0.1mSv/year.

   The Instruction determines that the partial release of the site shall be considered acceptable, prior to the declaration of decommissioning of the facility, once the licensee has been granted authorisation for dismantling and partial or complete release with restrictions on subsequent use, as long as certain criteria are met.

   In addition, the Instruction establishes that the licensee of the nuclear facility shall propose and justify the levels of release in accordance with the radiological criteria and uses foreseen for the site, along with the methodology for its final radiological characterisation with a view to demonstrating compliance.

3. CSN INSTRUCTION IS-18, of April 2nd 2008, on the criteria applied by the CSN to require the licensees of radioactive facilities to report on radiological events and incidents.

   This follows the same pattern as Instruction IS-10 on reportable events, but in this case in reference to radioactive facilities.

20.5. Assessment of compliance

Spain has set up a regulatory system that responds satisfactorily to the obligations established in the Convention. The fundamentals of the current legal framework are mainly established by the Nuclear Energy Act, Law 25/1964, and by Law 15/1980, creating the CSN, which have been updated several times since they were passed. The objective of the latest revision, through Law 33/2007, is, among others, to respond to the increasing environmental awareness of society, increasing public information and participation in matters included within the scope of competence of the CSN, reinforcing certain of its functions and competences, expressly reflecting in the internal legislation certain of the principles deriving from the international obligations undertaken by the State in relation to nuclear energy and updating the system of sanctions.

The autonomy in management, independence in decision-making and separation of the competences and functions of the authorities integrating the Spanish regulatory system in relation to nuclear energy are fully guaranteed by the legal system in force and, furthermore, faithfully adhered to in practice. As regards the economic and human resources required for the development of the responsibilities attributed, these are fully guaranteed in the case of the ministerial departments by the general provisions of the State on budgeting issues and the offer of public employment and, in the case of the CSN, also by Law 14/1999, regulating the application and collection of public prices for services rendered by the Nuclear Safety Council.

Consequently, the Spanish regulatory system may be said to fully satisfy the obligations established in article 20 of the Joint Convention.

Section F

Other provisions relating to safety

Section F. Other provisions relating to safety

ARTICLE 21
RESPONSIBILITY OF LICENSEE

Article 21. Responsibility of the licence holder

1. *Each Contracting Party shall ensure that prime responsibility for the safety of spent fuel or radioactive waste management rests with the holder of the relevant licence and shall take the appropriate steps to ensure that each such licence holder meets its responsibility.*
2. *If there is no such licence holder or other responsible party, the responsibility rests with the Contracting Party which has jurisdiction over the spent fuel or over the radioactive waste.*

21.1. RESPONSIBILITY OF LICENSEE IN RELATION TO SAFETY

The Spanish regulations establish as a basic principle that the primordial responsibility for the safety of waste management facilities shall be to the licensee.

The legal precepts by which the responsibility of the licensee is assigned are included in the Nuclear Energy Act and the Regulation on Nuclear and Radioactive Facilities (RNRF). From the point of view of civil liability for nuclear damage, the licensee of the facility is also identified as being responsible for compensating victims to the limit contemplated in the legislation. Consequently, the Spanish regulations on nuclear energy establish in principle that the primordial responsibility for the safety of the facilities is to the licensee.

The Nuclear Energy Act, Law 25/1964, defines the operator of a nuclear facility as being the physical or legal person holding the authorisation required for its start-up.

The RNRF in force establishes that in order to obtain the different authorisations the applicant must present the organisation contemplated for supervision of the project and guarantee quality during the successive phases of the facility. It also requires that he describe in detail each of the job posts in the organisation of the operator and the responsibilities assigned to each in relation to nuclear safety and radiological protection, and that he present the organisation foreseen for the future operation of the facility and a preliminary plan for the training of the operating personnel.

The recent modification of the RNRF in force also indicates that the licensee of the facility is also responsible for ensuring that all physical and legal persons intervening as contractors or sub-contractors at the facility carry out their activities under conditions of safety and in all cases in accordance with the requirements of the official documents.

Article twenty-five, "Fund for the financing of activities included in the General Radioactive Waste Plan", of Royal Decree Law 5/2005, of March 11th, on urgent reforms to promote productivity and improve public contracting, modifies the Electricity Industry Act, Law 54/1997, of November 27th, establishing that the State shall take over the ownership of radioactive wastes once they have been definitively disposed of. It shall also undertake whatever surveillance may be required following the decommissioning of a nuclear or radioactive facility, following the period of time established in the corresponding declaration of decommissioning.

21.2 LIABILITY FOR NUCLEAR DAMAGE

21.2.1 GENERAL ASPECTS OF THE SYSTEM ON CIVIL LIABILITY FOR NUCLEAR DAMAGE

Spain is a contracting party to the Paris Convention, of July 29th 1960, on civil liability for nuclear damage, and to the Brussels Convention, of January 31st 1963, complementing the former. The Paris Convention establishes a system of objective civil liability of the licensee of the facility for whatever nuclear damage might be caused by a nuclear accident. The amount and time of this liability is limited, expiring after 10 years from the moment of the accident, and it is required to be covered by an insurance policy or other authorised financial guarantee. The Brussels Convention of January 31st 1963 establishes a complementary system of compensation for victims, above the first level of compensations established by the Paris Convention.

The application of these Conventions in internal law is established in chapters VII to X of the Nuclear Energy Act, Law 25/1964 (NEA), which is developed by Decree 2177/1967, of July 22nd, approving the Regulation on the Coverage of Nuclear Risk. The amount for the civil liability attributed to the licensees of nuclear facilities, initially established in the internal legislation in compliance with the Paris Convention, was 300 million pesetas (1.8 million Euros). Nevertheless, in accordance with the recommendations of the Steering Committee of the OECD Nuclear Energy Agency, this amount was increased to 25,000 million pesetas (150 million Euros) in 1994, by Law 40/1994, on the Ordering of the National Electricity Industry.

In addition to the system of civil liability for nuclear facilities and the transport of nuclear substances, Law 25/1964 also contemplates a specific system of civil liability for radioactive materials and devices generating ionising radiations.

21.2.2. REVISION OF THE SYSTEM FOR CIVIL LIABILITY

During the period of the report there have been important novelties in relation to civil liability. As a starting point, on February 12th 2004 Protocols were approved amending the Conventions of Paris and Brussels. The first of these introduces the following changes, among others:

1. The amounts corresponding to the minimum liability attributable to the licensees are increased substantially, rising from 15 million special draft rights (SDR[1]) to 700 million Euros for nuclear facilities, and from no less than 5 million SDR to no less 70 and 80 million Euros for low risk facilities and the transport of nuclear substances, respectively.

[1] *Accounting unit defined periodically by the IMF. At the exchange rate in force in January 2004, 1 SDR = 1.188 €.*

2. The definition of nuclear damage is extended to include damage caused to the environment, as well as the direct economic losses deriving from the use and enjoyment of the environment.

3. The geographical scope of application of the Convention is extended to include as beneficiaries victims belonging to States that are not Party to the Convention, under certain circumstances.

4. The period for victims to make claims for personal damage is extended from 10 to 30 years.

In parallel to the above, the second, relating to the Brussels Convention, established new limits for the two complementary compensation brackets above the 700 million Euro level established by the Paris Convention as the minimum liability attributable to the licensee. Specifically, the limit for the second bracket, which may be covered with public funds or by attributing the responsibility to the licensee, rises to 1,200 million Euros, while the limit for the third, covered by public funds from all the States party to the Brussels Convention, rises to 1,500 million Euros.

Many of the EU member States are party to the Paris Convention and have subscribed these amendment Protocols. These States will make a joint deposit of their Protocol ratification instruments on a date as yet pending determination. When this occurs, their internal Law must fully adopt all the provisions of the aforementioned amendment Protocols. Meanwhile, Spain has approved two changes to the standards in force in order to anticipate the application of certain of the new obligations foreseen.

These two changes were introduced by means of the Electricity Industry Act, Law 17/2007, of July 4th, which amended the system of civil nuclear liability of the NEA.

- ✓ On the one hand, the level of obligatory coverage of civil liability for nuclear damage corresponding to nuclear facilities and the transport of nuclear substances was increased to 700 million Euros, with the possibility of this liability being reduced to a minimum 30 million Euros for those facilities and transport operations that, in the opinion of the Nuclear Safety Council, may be considered as low risk. Nevertheless, it should be pointed out that this change does not imply any modification to the types of damage for which the aforementioned coverage should be established, which continue to be those contemplated in the Paris Convention in force.

- ✓ On the other hand, a new system of civil liability for environmental nuclear damage was introduced, independent from the system referred to in the previous paragraph, which is also transitory in nature. This new system obliges nuclear facilities and transports of nuclear substances to establish coverage for civil liability for environmental nuclear damage of up to 700 million Euros, which may also be reduced to 30 million Euros for low risk facilities and transport operations. The Law establishes that the coverage will be provided by the electricity system itself as compensation for the payment of a premium established for this purpose. The entry into force of this transitory system will occur at such time as the Government approves the regulatory development that will regulate the payment of the premiums and will be cancelled when the new Law, currently in the initial phase, that will adapt the Spanish legal system to all the obligations deriving from the Protocols amending the Paris and Brussels Conventions is approved.

The aforementioned regulatory development for the establishment of the premiums to be paid by the operators for the coverage of environmental nuclear damage is currently in an advanced stage of development, and arrangements for the preliminary project of the new Law continue.

21.3. Regulatory control activities

Regulatory control is carried out fundamentally through the assessment and inspection activities performed by the CSN. Information on these activities is included in Section E, article 19.

In this context, and with a farther-reaching objective than that referring to responsibilities in waste management, the CSN has issued safety guide GSG-1.13, "Content of the operating regulations[1] of nuclear power plants".

Its objective is to define a set of criteria standardising the content of the operating regulations of the facilities in operation, firstly because there were significant differences in the content of the regulations of the different installations and, secondly, because the effects associated with the liberalisation of the economic framework of the electricity industry reinforce the importance of the tracking and control of the organisational changes at nuclear facilities.

The CSN requires the licensees of the plants to analyse, justify and document all reductions in the personnel performing safety-related functions at the facilities, even in the event that these do not require previous authorisation due to their not implying changes to the Operating Regulation in force at the corresponding installation.

21.4 Assessment of compliance

The Spanish legal framework expressly attributes the responsibility for safety to the licensee during all the phases of operation of nuclear and radioactive facilities. In particular, the State accepts the ownership of radioactive wastes once they have been definitively disposed of, along with the surveillance that might be required following the decommissioning of a nuclear or radioactive facility after the period of time established in the corresponding declaration of decommissioning. Consequently, the Spanish system is considered to meet the requirements demanded by this article of the Convention.

Article 22
Human and financial resources

Article 22. Human and financial resources

Each Contracting Party shall take the appropriate steps to ensure that:

(i) qualified staff are available as needed for safety-related activities during the operating lifetime of a spent fuel and a radioactive waste management facility;

(ii) adequate financial resources are available to support the safety of facilities for spent fuel and radioactive waste management during their operating lifetime and for decommissioning;

(iii) financial provision is made which will enable the appropriate institutional controls and monitoring arrangements to be continued for the period deemed necessary following the closure of a disposal facility.

[1] *The operating regulation is an official operating document that describes the structure and functions of the different sections of the licensee's organisation.*

22.1. Availability and qualification of human resources

By virtue of the modification of the Law by which the CSN was created, which has been referred to several times in this report, the Nuclear Energy Act (NEA) has been modified in order to clearly establish that the organisations responsible for the management of nuclear and radioactive facilities shall have available human, technical and economic resources adequate for the maintenance of conditions of safety and shall incorporate the basic principles of safety management. The previous practices demonstrated compliance with this precept, which is now definitively set out in the new text of the NEA.

The RNRF, which regulates the system of administrative authorisations, establishes requirements regarding the organisation that the licensee should present for the licensing of a facility and for personnel licences and accreditations.

✓ **Internal organisation of personnel**

In the operating application granted in accordance with the procedure indicated in the RNRF, the Operating Regulation of the installation contains the organisation of the licensee, including the functions and responsibilities of all job posts relating to nuclear safety and radiological protection. Any modifications to this document must be approved by the Directorate General for Energy Policy and Mines of the MITYC, following a mandatory report by the CSN.

In this chapter on organisation the basic initial and on-going training programmes for licensed and non-licensed personnel should also be defined, establishing the technical competence required for each specific mission, along with the re-training programmes considered suitable. Likewise, the Site Emergency Plan establishes the responsibilities and human resources required to address emergency situations.

The fact that the changes to the Operating Regulation of a facility are subject to a formal process of approval facilitates tracking and control by the CSN of any change in the organisation and in the management of the facility that might negatively affect its safety.

✓ **Personnel qualification – Legal framework**

According to the new wording of article 37 of the NEA:

The personnel of nuclear and radioactive facilities should fulfil the conditions of suitability established in the corresponding regulation, and shall necessarily undergo the medical check-ups or other checks determined in the regulations in order to verify such compliance.

At nuclear facilities there shall be an Operations Manager meeting the conditions established in the regulations; he shall be responsible for supervising all usage and operation of the facility and shall be technically responsible for its operation.

The Operations Manager shall be empowered to suspend the operation of the facility if he considers it appropriate or necessary.

The RNRF also establishes that occupying the posts of Head of the Radiological Protection Service and Supervisor and Operator of nuclear or radioactive facilities requires the possession of specific licences. Each of these licences is personal, entitles the bearer to perform work at a given facility and is granted by the CSN following an examination presided over by a Tribunal appointed by the CSN[1] and de-

[1] *Documentary basis: CSN Safety Guides 1.1. Qualification for the granting and use of NPP operating personnel licences, and 7.2., Qualifications for recognition as an expert in protection against ionising radiations.*

signed to demonstrate the competence of the candidates to undertake responsibility for the corresponding service or technical unit or as Head of the Radiological Protection Service.

Once the facilities enter into operation, the CSN performs periodic inspections aimed mainly at checking the academic background, experience and training required for each job post, the basic training in radiological protection of all the operators and the scope of the retraining programmes, verifying that they cover changes to the standards, design modifications and relevant operating experience. The licensees are required to submit an annual report to the CSN summarising the main initial and on-going training activities of their personnel and relating to nuclear safety or radiological protection.

At present, a two-yearly programme of inspections of these staff or off-site licensed or non-licensed personnel training programmes allows a high degree of confidence to be maintained as regards the licensees' training activities.

Furthermore, and as has been pointed out repeatedly in this report, the RNRF underwent an important amendment in January 2008, particularly in relation to personnel qualification. The most important aspects introduced in this respect are as follows:

- The conditions for the supervisor and operator licences awarded by the CSN are now regulated in greater detail. Novelty aspects are the extension of the term of validity of the licences to a maximum six years for nuclear fuel cycle radioactive facilities or, in the case of installations in the dismantling phase, the power of the CSN to determine what activities are to be carried out by licensed personnel, and the number and type of licences to be held by the personnel. Likewise, it has been expressly established that the supervisors and operators are obliged to report to the licensee of the facility any defects existing, in their opinion, in the official documents of the authorisation or in the operating procedures, or any others that might affect nuclear safety or radiological protection.
- In addition, the former RNRF established that nuclear and radioactive facilities belonging to the nuclear fuel cycle would have a radiological protection service, for which would be responsible a person accredited for this purpose as Head of the Radiological Protection Service. The amendment to the RNRF adds that this requirement shall be applicable also during the active phases of dismantling. As regards the inactive phases of this process, the CSN shall determine whether or not this requirement is maintained on a case by case basis.

✓ **Human resources available at ENRESA**

Within the context of their organisation, the nuclear and radioactive facilities have adequate personnel for the radioactive waste management activities carried out at their sites, which are generally a relatively minor part of the overall activities.

The case of ENRESA is different, due to its being a company created specifically for the final management of the radioactive wastes generated in the country, the dismantling of installations, activities relating to both and management of the funds required for all such activities.

As of December 31st 2007, ENRESA had a workforce of 296 persons, of whom 173 are employed at the company's Madrid headquarters, 120 at the El Cabril disposal facility and 3 in the Vandellós 1 NPP dismantling and decommissioning project. This workforce might be modified since the company has been appointed as Responsible Operator during the dismantling and decommissioning of the José

Cabrera NPP. At that moment the needs for operating personnel will be adapted to the legal requirements indicated above and to the number of technicians that might be considered necessary.

22.2. AVAILABILITY OF FINANCIAL RESOURCES

Royal Decree 1349/2003 on the ordering of the activities of ENRESA[1], which was described in detail in the Second National Report, established the revenues for the Fund for the Financing of Activities included in the GRWP. According to the said Royal Decree, these were as follows:

1. The amounts collected through tariffs for supply to end clients and tariffs for access through the application of percentages on electricity billing.
2. The amounts collected for the management of radioactive wastes arising from the manufacturing of fuel assemblies and for the dismantling of fuel assembly manufacturing facilities. This objective is covered by a mechanism of annual contributions throughout the lifetime of these facilities, such that the payments plus the corresponding financial yield cover the costs foreseen for these activities, in accordance with the estimates included in the GRWP.
3. The result of billing, by means of tariffs approved by the Ministry of Industry, Tourism and Trade, for the rendering of the management service for the radioactive wastes produced, applied to the operators of radioactive facilities generating radioactive waste as a result of applications in medicine, industry, agriculture and research.
4. Any other method of income not contemplated in the previous paragraphs.

Royal Decree Law 5/2005, on Urgent Measures for the Promotion of Productivity and for the Improvement of Public Contracting[2], introduced highly significant changes in this system of financing, establishing that the radioactive waste management costs attributable to the operation of the nuclear power plants after March 31st 2005 would be billed directly to the nuclear power plant licensees. The sum of this billing is the result of multiplying the gross kilowatt-hours (KWh) generated by each plant by a unit value specific to each such facility. These unit values are established by the MITYC and may be revised annually by means of a Royal Decree based on an updated technical-economic report.

For this purpose, the following are considered attributable to operation following March 31st 2005:

- ✓ the costs associated with the management of radioactive wastes deposited in the plant storage facility as from that date, along with the proportional part of the dismantling and decommissioning costs corresponding to the operating period remaining for the plant as from that date.
- ✓ the costs associated with the management of spent fuel resulting from the fresh fuel introduced in the reactor during refuelling outages completed after that date.

As regards the costs deriving from radioactive waste management attributable to the operation of the nuclear power plants prior to April 1st 2005, these are considered as diversification and guaranteed supply costs and are covered using the method applied formerly, through the aforementioned percentages on electricity billing.

[1] Royal Decree 1349/2003, of October 31st, on the ordering of the activities of the Empresa Nacional de Residuos Radiactivos, S.A. (ENRESA) and their financing. Official State Gazette No 268, of November 8th 2003.

[2] Royal Decree Law 5/2005, of March 11th, on urgent reforms for the promotion of productivity and the improvement of public contracting. Official State Gazette No 62, of March 14th 2005.

Furthermore, Royal Decree 1349/2003 adds that transfers to the Fund may be invested only in expenses, work, projects and fixed assets contemplated in the General Radioactive Waste Plan and that on the conclusion of the radioactive waste management and facility dismantling period contemplated in the GRWP, the total amounts deposited in the Fund via the different financing channels should cover the costs incurred, such that the final resulting balance be zero.

The management of the Fund created, which is the responsibility of ENRESA, is governed by principles of security, profitability and liquidity, and there is a Tracking and Control Committee, attached to the MITYC, responsible for the supervision, control and qualification of transitory investments.

Within the framework of its obligations deriving from Royal Decree 1349/2003, ENRESA is required to submit annually to the MITYC an updated economic-financial report on the cost of the activities contemplated in the GRWP.

Figure 5 gives a general idea of the different revenues for the financing of the activities included in the GRWP and of the mechanisms for their control:

Law 33/2007, which modifies the Law creating the CSN, also refers to the financing of GRWP activities, applying two new costs to the heading of radioactive waste management:

- ✓ The ENRESA allocations for municipal areas affected by nuclear power plants or spent fuel or radioactive waste storage facilities, in the terms established by the MITYC.
- ✓ The sums corresponding to the charges applied in relation to radioactive waste and spent fuel storage activities (in this respect it should be pointed out that the Autonomous Community of Andalusia has recently created a tax on radioactive waste deposits that fully affects the LILW and VLLW facility at El Cabril[1]).

22.3. Assessment of compliance

In Spain there is a legal framework that contemplates the requirements regarding the organisation of the internal personnel and their qualification that allows for compliance with the requirements of article 22. There is also a financing scheme that allows for the performance of the activities required for the construction, operation, decommissioning, dismantling and institutional surveillance of RW and SF management facilities. Consequently, the contents of article 22 of the Convention are considered to be complied with.

Article 23
Quality assurance

23.1. Quality assurance programme in the management of spent fuel and radioactive waste

As was described in the First and Second National Reports, all activities relating to the management of spent fuel and radioactive waste are subject to a quality assurance programme (QAP). The licensee of the authorisation for the regulated facility or activity is responsible for establish-

[1] *Law 12/2006, of December 27th, on Public Finance Complementary to the Budget of the Autonomous Community of Andalusia, official Gazette of the Regional Government of Andalusia No 251, of December 30th 2006 (see heading 19.1.).*

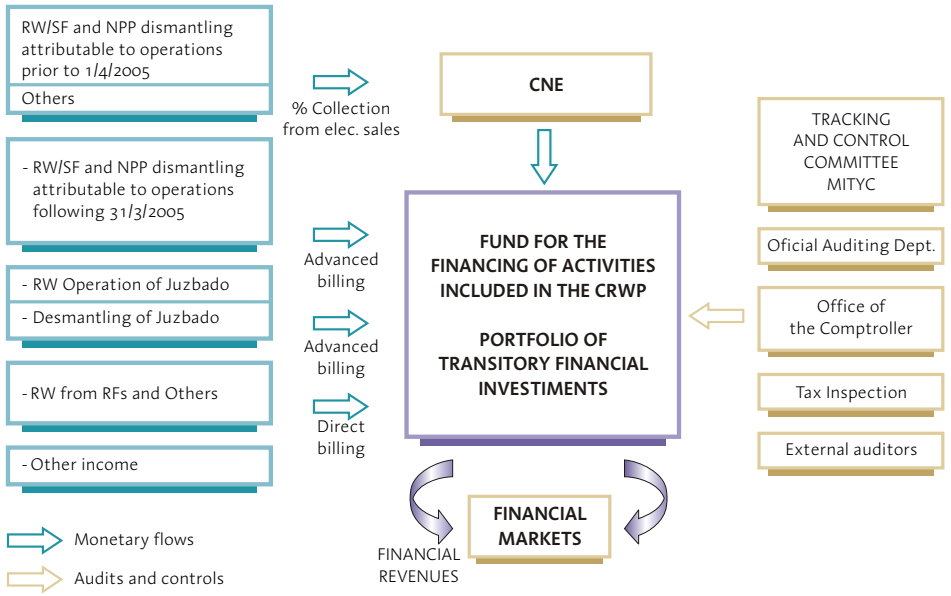

Figure 5. Financing of the activities included in the GRWP and mechanisms for their control.

ing and implementing the QAP. QAP's are required to comply with standard UNE 73-401 "Quality assurance at nuclear facilities", the requirements of which are equivalent to those of Appendix B of the USNRC's 10 CFR50 and to those of the IAEA 50-C/SG-Q codes and guidelines on quality assurance at nuclear power plants and other nuclear facilities. The application of the basic standards of the country of origin of the project or of the guidelines and codes issued by the IAEA and that the CSN considers to be appropriate is also considered acceptable. The CSN has issued several safety guides (see Annex A) to facilitate the implementation of the QAP's.

No changes have occurred in the applicable standards nor have any new guides been issued modifying the quality assurance requirements applicable in spent fuel and radioactive waste management.

The CSN is currently working on the preparation of a standard for the implementation of a Management System, in accordance with the requirements of the IAEA document GS-R-03 "The Management System for Facilities and Activities". For this purpose a mixed CSN-licensees working group has been set up with a view to implementing the Management System at all nuclear facilities by January 1st 2010. During 2008 the working group is expected to draw up a guideline for the writing of the Management System Manuals, including a definition of scopes and appropriate conceptual clarifications, as an aid for the implementation of the Management System. Furthermore, each facility must identify its current situation and the additional actions to be performed to meet all the requirements established in GS-R-3.

23.2. Quality assurance programmes inspection and assessment system

There have been no changes in the systematic approach to assessing and inspecting the quality assurance programmes applicable to the management of spent fuel and radioactive waste de-

scribed in the first and second national reports. See point 19.3, "Nuclear and radioactive facilities inspection and assessment system", in this report.

During the period corresponding to the Third National Report, assessment activities have been performed with respect to the Quality Plans for the design and construction of the Individualised Temporary Storage (ITS) facility for the spent fuel from the José Cabrera nuclear power plant, now in the phase of definitive shutdown, and the Quality Plans for the design and manufacturing of the spent fuel storage and transport casks for the José Cabrera and Trillo plants. Assessment activities have also been carried out with respect to the Quality Assurance Programme for the dismantling of the CIEMAT installations.

As regards inspection activities, the period has included two-yearly inspections of the Quality Assurance Programme for the El Cabril centralised disposal facility for solid low and intermediate level wastes, along with an annual inspection of the application of quality assurance in activities relating to the transport of radioactive materials and inspections of the application of Quality Plans in the design and manufacturing of casks for irradiated fuel.

23.3 Assessment of compliance

From what has been set out in the previous sections it may be deduced that in Spain there is a sufficient regulatory framework and that adequate quality assurance programmes are applied in relation to the management of spent fuel and radioactive waste.

Article 24
Operational radiological protection

Article 24. Operational radiation protection

1. *Each Contracting Party shall take the appropriate steps to ensure that during the operating lifetime of a spent fuel or radioactive waste management facility:*
   - *(i) the radiation exposure of the workers and the public caused by the facility shall be kept as low as reasonably achievable, economic and social factors being taken into account;*
   - *(ii) no individual shall be exposed, in normal situations, to radiation doses which exceed national prescriptions for dose limitation which have due regard to internationally endorsed standards on radiation protection; and*
   - *(iii) measures are taken to prevent unplanned and uncontrolled releases of radioactive materials into the environment.*
2. *Each Contracting Party shall take appropriate steps to ensure that discharges shall be limited:*
   - *(i) to keep exposure to radiation as low as reasonably achievable, economic and social factors being taken into account; and*
   - *(ii) so that no individual shall be exposed, in normal situations, to radiation doses which exceed national prescriptions for dose limitation which have due regard to internationally endorsed standards on radiation protection.*
3. *Each Contracting Party shall take appropriate steps to ensure that during the operating lifetime of a regulated nuclear facility, in the event that an un-*

planned or uncontrolled release of radioactive materials into the environment occurs, appropriate corrective measures are implemented to control the release and mitigate its effects.

The provisions of Spanish law that refer to radiological protection are included fundamentally in Law 15/1980, of April 22nd, creating the CSN, and in the Regulation on the Protection of Health against Ionising Radiations (RPHIR), approved by Royal Decree 783/2001, of July 6th 2001.

The law creating the CSN assigns to this organisation the functions of surveillance and control of the levels of radioactivity inside and outside Spanish nuclear and fuel cycle facilities, as well as of their specific or cumulative impacts on the areas in which they are located, the control of the doses received by the operating personnel and informing and advising the Government on commitments with other countries or international organisations in relation to nuclear safety and radiological protection.

The basic standards for the radiological protection of professionally exposed workers and the members of the public against the risks of exposure to ionising radiations are established in the RPHIR, which transposes the provisions of Directive 96/29 EURATOM to the Spanish legislation.

The basic standards for the radiological protection of professionally exposed workers and the members of the public against the risks of exposure to ionising radiations are also applicable at spent fuel and radioactive waste storage installations.

In Spain, spent fuel is stored temporarily in the fuel pools of the nuclear power plants and in the individualised temporary storage (TS) facilities located at the plant sites, designed for this purpose pending the availability of a centralised storage facility. Low and intermediate level wastes are disposed of at the El Cabril facility, an ENRESA installation located in Sierra Albarrana (Córdoba).

As an additional development of the provisions of the aforementioned Regulation, the Nuclear Safety Council has published several Instructions advising the licensees of nuclear power plants on the procedures to be adhered to in order to comply with certain of these provisions, in particular IS-02, IS-03, IS-04 and IS-06.

Described below are the measures implemented in Spain to protect the workers and the public during the operating lifetime of radioactive waste and spent fuel management facilities.

24.1. Protection of the workers

24.1.1. Measures adopted to ensure that exposure to ionising radiations is kept as low as is reasonably achievable

In 1977 the International Commission on Radiological Protection (ICRP) approved a set of basic recommendations (publication No 62) that implied the entry into force of a radiological protection system based on three basic principles: justification, optimisation and limitation of individual doses, this being endorsed and reinforced in the new ICRP recommendations adopted in 1990 (Publication No 60).

These three basic principles are incorporated in the Spanish legislation in the aforementioned Regulation on the Protection of Health against Ionising Radiations.

The principle of optimisation, which is recognised as being hierarchically superior to the other two principles, constitutes the fundamental basis of the current doctrine of radiological protec-

tion, and is formulated in the following terms: "The individual doses, the number of persons exposed and the probability of there being potential exposures should be kept at the lowest value reasonably possible, taking into account economic and social factors".

The application of this principle requires, among many other aspects, that special attention be paid to each and every one of the radiological protection measures aimed at preventing exposure to radiations, which are based fundamentally on the following:

- ✓ Assessment (prior to implementation) of the radiological risk associated with each activity involving the use of ionising radiations.
- ✓ The radiological classification of the workers involved, depending on the radiological risk inherent to the work to be performed as part of that activity.
- ✓ The radiological classification of the work places, depending on the levels of radiation and contamination foreseeable as a result of that activity.
- ✓ The application of standards and control measures adequate for the different categories of exposed workers and the different places of work.

These preventive measures are included in the radiological protection manuals, which are one of the official operating documents of nuclear and nuclear fuel cycle facilities. These radiological protection manuals require the favourable appreciation of the Nuclear Safety Council prior to their initial entry into force.

Thus, in the nuclear power sector the practical application of the principle of optimisation (or ALARA principle) is accomplished by establishing a systematic approach for the revision of the radiologically most relevant jobs, with identification of the tasks implying the greatest radiological risk, the preparation and planning of these tasks, their monitoring for the identification and control of deviations to the aforementioned planning and, if appropriate, the implementation of the necessary corrective actions. Finally, a subsequent revision of the work is performed, analysing any deviations and their causes in order to establish future lines for improvement.

The current trend in the technologically developed nations is to consider that the efficient implementation of the ALARA principle requires a serious commitment to and motivation with this principle by all the members of the plant organisation, from the highest levels of Management to those actually performing the work, and including all the levels of management in the different departments of the organisation related to occupational doses. For this reason, since the early 1990's the Spanish nuclear power plants have been modifying their operating organisations in order to ensure that all their elements are seriously and formally committed to compliance with this principle.

In keeping with these new trends in the practical application of the optimisation of radiological protection, the CSN has dedicated its efforts since 1991 to defining patterns and criteria to ensure this commitment and promote a doctrine whose bases are established in CSN Safety Guide 1.12, "Practical application of the optimisation of radiological protection in the operation of nuclear power plants". Implementation has followed the general scheme described below:

1. A top management level responsible for promoting and approving the ALARA culture and dose objectives and for providing the resources required to carry out this policy.
2. A middle management level of executives responsible for proposing the ALARA policy and dose objectives and for revising initiatives and analysing the results obtained, taking corrective actions.
3. A level of technicians responsible for performing the analysis, planning and tracking of tasks and revising the results obtained, as well as for proposing improvement actions.

The implementation of this doctrine has meant important modifications in the operating organisations of the Spanish nuclear power plants, where multidisciplinary committees have been set up, with the participation of the managers of the different plant departments, especially oriented towards the efficient implementation of the ALARA principle. These committees meet periodically to specify and plan the actions required to fulfil this objective, with special attention to those plant activities that are most significant from the radiological point of view.

As in the case of the nuclear power plants, the fuel cycle and waste storage facilities have Dose Reduction Programmes and the organisational structures required for the efficient implementation of the ALARA principle, these logically being adapted to the specific characteristics and intrinsic radiological risks of such installations.

24.1.2. Measures adopted to ensure that no worker is exposed, in normal situations, to radiation doses in excess of the national dose limitation prescriptions, with due account given to internationally approved radiological protection standards

The Regulation on the Protection of Health against Ionising Radiations establishes the following dose limits for the professionally exposed workers of Spanish nuclear and fuel cycle facilities:

- ✓ Effective dose limit: 100 mSv in five consecutive calendar years, subject to a maximum effective dose of 50 mSv in any one calendar year.
- ✓ Dose limit to the skin (averaged over 1 cm^2): 500 mSv per calendar year.
- ✓ Dose limit to the lens of the eye: 150 mSv per calendar year.
- ✓ Dose limit to hands, forearms, skin and ankles: 500 mSv per calendar year.

One of the functions assigned to the CSN is the control of the radiation doses received by the operating personnel of the Spanish nuclear and fuel cycle facilities.

In most cases, the control of the radiation doses received by professionally-exposed workers is accomplished through individual surveillance by passive physical dosimeters. There are cases, however, in which, if the radiological risk is sufficiently low, the radiological surveillance of the environment in which the workers perform their work activities may suffice.

In Spain the dosimetric surveillance of workers exposed to ionising radiations is regulated by the aforementioned Regulation, which provides that individual dosimetry is to be undertaken by Personnel Dosimetry Services expressly authorised by the CSN.

In compliance with this function, the CSN established in Safety Guide 7.1 (Technical-administrative requirements for Individual Personal Dosimetry Services), the technical and administrative requirements to be met by entities wishing to be officially authorised as Personal Dosimetry Services. The CSN also established the tests required to accredit the adequate operation of the dosimetry services and associated acceptance criteria.

The regulatory provisions established in the Regulation on the Protection of Health against Ionising Radiations determine that a dosimetry history file should be opened for each professionally-exposed worker, to include all the doses received by such workers throughout their working lifetime. These provisions assign to the licensee of the practice the responsibility for maintaining such files until the worker reaches the age of 65 years and never for less than 30 years as from the date of retirement of the worker.

In 1985, the CSN agreed to implement a National Dosimetry Bank (NDB) in Spain to centralise the dosimetry histories of all professionally-exposed workers from the country's nuclear and fuel cycle facilities.

The NDB is a fundamental tool for the regulatory control of the doses received by these workers and allows for the following:

- ✓ Availability of updated information on the dosimetry histories of each of the workers.
- ✓ Performance of sector-specific statistical studies of radiation exposure trends of different groups of workers, this allowing for the identification of areas of interest from the point of view of the ALARA principle.
- ✓ Study of the doses resulting from the operation of any nuclear or radioactive facility in Spain.

By way of an indication of the volume of information that is contained in the NDB, it may be pointed out that on closure of the dosimetry year 2007, there were records of approximately 13,608,000 dosimetry measurements, corresponding to some 262,000 workers and some 45,100 installations. Each of these measurements was accompanied by information on the type of facility and the work performed by the worker.

The number of dosimetrically controlled persons exposed to ionising radiations in Spain amounted to 98,539 in 2007. Particularly noteworthy is the fact that, although the maximum regulatory effective dose for professionally exposed personnel in any one calendar year is 50 mSv:

- ✓ 99.09% of the dosimetrically controlled workers (97,641) received doses lower than 6 mSv/year.
- ✓ 99.94 % of the dosimetrically controlled workers (98,475) received doses lower than 20 mSv/year.

This distribution underlines the positive trend shown by the Spanish nuclear and fuel cycle facilities as regards compliance with the dose limits (100 mSv over five years) established in the Regulation on the Protection of Health against Ionising Radiations.

Presented below are specific data on the dosimetry of professionally exposed workers during 2007.

a) Nuclear power plants

With regard to the dosimetry results corresponding to 2007 for the nuclear power plants overall, it should be pointed out that there were a total 8,152 professionally exposed and dosimetrically controlled workers in this area. The dosimetry readings reflected a collective dose of 11,620 mSv.person, the overall average individual dose for this group being 2.8 mSv/year, calculation of this parameter considering only workers with significant doses[1]. This average individual dose amounted to 5.6 % of the maximum annual dose permitted by the regulations (50 mSv/year).

The main contribution to collective dose in this sector corresponded to contracted personnel (10,514 mSv.person), with a total of 6,261 workers and an average individual dose of 3.05 mSv/year. In the case of the plant personnel, the collective dose was 1,106 mSv.person, with a total 1,958 workers and an average individual dose of 1.52 mSv/year.

As regards internal dosimetry, controls were carried out by directly measuring the whole body radioactivity of all the workers with a significant risk of incorporating radionuclides, and in no case were values higher than the registration level established (1 mSv/year) detected.

The dosimetry results for 2007 at the Spanish nuclear power plants are shown in Table 10.

[1] *Significant doses are considered to be those exceeding the registration level (0.1 mSv/month).*

Table 10.

	OVERALL	PLANT STAFF	CONTRACTED
No of exposed workers	8,152	1,958	6,261
Collective dose (mSv*person)	11,620	1,106	10,513
Average individual dose (mSv/year)	2.8	1.52	3.05

b) Juzbado fuel assembly manufacturing facility

In 2007 there were 449 professionally exposed workers carrying out activities at the Juzbado fuel assembly manufacturing facility. The dosimetry readings implied a collective dose of 42 mSv.person. If only the workers with significant doses are considered, the average individual dose for this group amounts to 0.47 mSv/year, a percentage of 0.94 % with respect to the maximum annual dose permitted by the regulations.

As regards internal dosimetry, controls were carried out on 76 persons by the direct measurement of whole body radioactivity, and on 229 persons by the analysis of excreta. In no case was internal contamination in excess of the registration level (1 mSv/year) detected.

The dosimetry results for 2007 at the Juzbado fuel assembly manufacturing facility are shown in Table 11.

Table 11.

No of exposed workers	449
Collective dose (mSv*person)	42
Average individual dose (mSv/year)	0.47

c) El Cabril radioactive waste disposal facility

In 2007 there were 210 professionally exposed workers carrying out activities at the El Cabril radioactive waste disposal facility. The dosimetry readings implied a collective dose of 10 mSv.person. If only the workers with significant doses are considered, the average individual dose for this group amounts to 0.33 mSv/year, a percentage of 0.65 % with respect to the maximum annual dose permitted by the regulations.

As regards internal dosimetry, controls were carried out on 118 persons by the direct measurement of whole body radioactivity. In no case was internal contamination in excess of the registration level (1 mSv/year) detected.

The dosimetry results for 2007 at the El Cabril radioactive waste disposal facility are shown in Table 12.

TABLE 12.

No of exposed workers	210
Collective dose (mSv*person)	10
Average individual dose (mSv/year)	0.26

24.2. PROTECTION OF THE PUBLIC

The Regulation on the Protection of Health against Ionising Radiations expressly requires that the exposure to which members of the public are subjected as a result of a justified practice should be kept as low as reasonably achievable, taking into account economic and social factors (ALARA). This philosophy is applied in both the licensing and operating, dismantling and decommissioning phases of Spanish nuclear facilities in general, and spent fuel and radioactive waste storage facilities in particular, as is set out in the official operating documentation of each.

As regards dose limitation, the RPHIR establishes the following dose limits for members of the public:

- ✓ Effective dose limit of 1 mSv per calendar year. Nevertheless, in special circumstances a higher effective dose value may be authorised in a single calendar year, as long as the average over five consecutive calendar years does not exceed the aforementioned value.
- ✓ Notwithstanding the above, an equivalent dose limit of 15 mSv is established per calendar year for the lens of the eye, and of 50 mSv for the skin.

In order to guarantee compliance with these limits and ensure that the exposure of the public is as low as reasonably achievable, the following is required:

- ✓ Practices are suitably planned such that the release to the environment of radioactive effluents is avoided or reduced to the minimum reasonably achievable.
- ✓ The levels of activity for the emission of radioactive effluents to the environment shall be such that both the concentrations of activity of the radionuclides present therein and the doses that may be received by the population be as low as reasonably achievable, taking into account economic and social factors, and in any case lower than the limits specified for members of the public.
- ✓ Facilities at which effluents and solid wastes implying a significant radiological risk may be generated shall be equipped with independent and specific systems for storage, treatment and , where appropriate, disposal, the operation of which shall be adequately revised to prevent uncontrolled releases.

24.2.1. LIMITATION OF RELEASES AT NUCLEAR FACILITIES

Releases of radioactive effluents require express authorisation by the MITYC, following a report by the Nuclear Safety Council (CSN). The operating permits of all Spanish nuclear facilities establish, as part of the Operating Technical Specifications (OTS's), the system for the limitation, surveillance and control of radioactive effluents, which includes the following:

- ✓ release limits,
- ✓ the sampling and analysis programme required to verify compliance with the limits,
- ✓ the obligation to perform monthly dose calculations and to estimate the doses in the last twelve consecutive months,
- ✓ the minimum instrumentation required for the surveillance and control of effluents, as well as the requirements regarding operability, surveillance testing and the determination of monitor setpoints, and
- ✓ the operability requirements of effluent treatment systems, with the obligation to carry out a dose projection in order to plan the treatment of effluents prior to their being released off-site.

At the nuclear power plants, the detailed development of these Technical Specifications is included in the Dose Calculation Manual (DCM), this not being the case at the El Cabril waste disposal facility, where they are dealt with in the Specifications document itself. The DCM is an official operating document for nuclear facilities that contains the methodology and parameters used to estimate doses to the critical individual and to calculate the setpoints of effluent monitors.

At present, an effective dose limit of 0.1 mSv/year is applied to nuclear power plants, both during operation and in the phase of dismantling, considered for periods of twelve consecutive months. This value, which corresponds to the overall effluents emitted by each of the site groups, is distributed between liquids and gases depending on the specific characteristics of the site, although generally the value is 0.08 mSv/year for gaseous effluents and 0.02 mSv/year for liquid effluents.

An interesting aspect is the fact that at the Spanish nuclear power plants the water in the irradiated fuel storage pools does not constitute a make-up to the liquid radioactive effluent treatment systems.

At the José Cabrera plant, which was definitively shut down on April 30th 2006, the limits that were in force during the operation of the facility have continued to be applicable.

At the El Cabril disposal facility, the criterion of zero releases is applied for liquid radioactive effluents. The potentially contaminated waters generated are incorporated in the mortar used to fill the containers. Consequently, at this installation only gaseous radioactive effluents are emitted to the environment, for which the release limit is an effective dose of 0.01 mSv during twelve consecutive months.

24.2.2. Verification of compliance with release limits

Given that release limits are established in terms of dose, the licensees of the Spanish nuclear facilities have to estimate every month the dose accumulated over twelve consecutive months; these calculations are carried out using as the source term the results obtained from the sampling and analysis programmes and applying the procedures specified in the DCM.

The objective of estimating the doses due to radioactive effluents is to verify compliance with the release limits even under the most unfavourable conditions, as a result of which these estimates are very conservative. For each installation a critical group is defined, as described in ICRP-60. The critical groups are assumed to be located in the area in which concentration in the air and the deposition of aerosols is estimated to be maximum. As regards the parameters involved in the calculations, values specific to each site are used for local characteristics, the habits of the population and land and water use. However, certain generic values are also used, such as ani-

mal grazing periods, the time elapsing between foodstuff production and consumption, etc. The methodology used, which is described in the DCM, is the same at all Spanish nuclear facilities and takes into consideration the following assumptions:

- ✓ the calculations are performed for maximum individuals, these being those whose habits represent a reasonable deviation with respect to the mean for the population,
- ✓ all foodstuffs consumed are produced in the area in which the critical group is located, and
- ✓ the critical group for gaseous effluents also consumes water, crops watered with and animal products contaminated by water affected by the liquid effluents released.

The values obtained from these calculations are submitted monthly to the CSN, along with other relevant data on effluents, where compliance with the authorised limits is verified and the trend of the releases is analysed and assessed.

The OTS's also establish that the licensees must carry out environmental radiological surveillance programmes (ERSP's) in the areas of influence of nuclear facilities. These programmes, which are previously evaluated and approved by the CSN, imply the collection and analysis of a large number of samples of air, water, soils and sediments, indicating organisms and foodstuffs. The results of the ERSP's, which are submitted annually to the CSN, allow insight to be gained into the true environmental impact of the releases.

In addition, the CSN performs periodic dose estimates based on actual release data and environmental measurements.

24.2.3. Control of releases

In accordance with the regulatory requirements, the Spanish nuclear facilities have liquid and gaseous effluent treatment systems. In designing these systems the principle of optimisation has been taken into account, and they incorporate the instrumentation required to ensure adequate surveillance and control of the effluents prior to their release off-site. These systems allow for the collection, storage and processing of the different types of liquid and gaseous radioactive wastes generated during the normal operation of the facilities and during foreseen operating incidents.

The operating permit for nuclear facilities requires the licensee to carry out a detailed study of releases and a radiological assessment of their consequences, and describes how the measures adopted for their treatment and control fulfil the national and international requirements.

During operation, the licensees are required to demonstrate that all reasonable efforts are made, from the generation of the wastes to the operating procedures of the treatment systems, to reduce releases and keep their radiological impact as low as is technically and economically possible. They are required to implement an on-going improvement programme in keeping with the evolution of the applicable standards, technological progress and operating experience. Likewise, they are required to consider the applicability of new standards in the countries of origin of the projects.

For the last few years the licensees of the nuclear power plants have also been required to undertake a periodic safety review, including the following on the basis of a ten-year period:

- ✓ analysis of the overall performance of the facility,
- ✓ demonstration that the lessons learned from the analysis of operating experience have been correctly implemented, and

- ✓ evaluation of whether the relevant changes introduced in new generation plants are applicable to the facility.

Furthermore, the CSN systematically performs an analysis of the trends observed in the radioactive effluents of all the nuclear facilities, requiring the licensee to justify any upward trend and to re-establish the original values if feasible, even if the values are far below the release limits established. In this respect, for the liquid and gaseous effluents from the Spanish nuclear power plants certain "reference levels" are used, expressed in terms of the activity of groups of nuclides, which indicate the optimum operation of the reactor in relation to the generation of radioactive wastes and environmental releases.

Consequently, as regards the control of radioactive effluents the Spanish regulatory system constitutes an adequate framework for the efficient application of a clearly established policy that requires the implementation of the applicable technological progress, that complies with the requirements and recommendations of the competent international organisations and that incorporates the measures required to ensure that releases are limited and that the impact on the public and the environment is minimised.

The releases from the Spanish nuclear power plants and from the El Cabril disposal facility in 2005, 2006 and 2007 are summarised in Tables 13 and 14, respectively.

In the case of José Cabrera nuclear power plant, the effluents that have been released since the shutdown of the plant have been generated as a result of the tasks performed in preparation for dismantling.

These releases represent a minimum risk for the members of the public and for the population overall, as may be deduced from the doses due to the releases for these three years. Although the estimates made are conservative, the values obtained for the effluents (liquid and gaseous) from the Spanish nuclear power plants have not exceeded 3.7 % of the limit, this value being 1.6% in the case of the effluents (gaseous) from the El Cabril disposal facility.

24.2.4. Non-planned or uncontrolled releases

In order to prevent non-planned and uncontrolled releases of radioactive materials to the environment, the Spanish nuclear facilities are equipped with the following:

- ✓ Surveillance instrumentation allowing such releases to be detected
- ✓ Release isolation devices if certain pre-established values are exceeded
- ✓ Activation of alarms if abnormal conditions are detected
- ✓ Administrative controls.

Nevertheless, if despite these measures there is an uncontrolled or non-planned release, the licensees of nuclear facilities are required to adopt the measures required to detail or control the release – if this is possible – and to minimise its off-site impact. Likewise, they are required to identify the cause or causes of the release and define the actions to be adopted to prevent it from occurring. All these aspects have to be reported to the CSN for analysis and approval. If considered necessary, the measures adopted are incorporated in the other installations of the same type.

The ERSP's carried out by the licensees of the nuclear facilities make it possible to identify any increases in environmental activity as a result of such releases and to check the efficiency of the measures adopted to mitigate their effects.

In November 2007 there was an event at the Ascó I nuclear power plant with a release of radioactive material to the environment. As this report is drawn up, the CSN is investigating the event, analysing its possible radiological impact and studying the actions that will derive from it.

Table 13.
Activity of radioactive effluents from the Spanish nuclear power plants (Bq).

	PWR Plants						BWR Plants	
	José Cabrera [1]	Almaraz I and II	Ascó I	Ascó II	Vandellós II	Trillo	Sta. Mª Garoña	Cofrentes
Liquid Effluents								
2005								
Total except Tritium and Gases	1.36×10^{8}	4.51×10^{9}	3.20×10^{9}	9.46×10^{9}	9.65×10^{9}	3.93×10^{8}	5.63×10^{8}	$9.31\ 10^{7}$
Tritium	3.12×10^{12}	1.69×10^{13}	3.80×10^{13}	2.15×10^{13}	8.23×10^{12}	1.22×10^{13}	2.17×10^{11}	$9.15\ 10^{11}$
Dissolved Gases	LDL [1]	LDL	6.61×10^{7}	1.04×10^{9}	3.91×10^{7}	(2)	LDL	5.41×10^{8}
2006								
Total except Tritium and Gases	1.30×10^{8}	3.61×10^{9}	8.01×10^{9}	3.28×10^{9}	1.50×10^{10}	5.88×10^{8}	1.50×10^{8}	6.18×10^{7}
Tritium	1.12×10^{13}	4.60×10^{13}	1.97×10^{13}	3.16×10^{13}	2.81×10^{13}	1.83×10^{13}	3.20×10^{11}	6.06×10^{11}
Dissolved Gases	4.59×10^{7}	LDL	2.72×10^{8}	7.30×10^{9}	1.18×10^{7}	(2)	LDL	2.39×10^{9}
2007								
Total except Tritium and Gases	4.37×10^{7}	3.08×10^{9}	5.77×10^{9}	6.17×10^{9}	8.43×10^{9}	3.20×10^{8}	4.58×10^{8}	8.75×10^{7}
Tritium	7.78×10^{11}	3.80×10^{13}	2.79×10^{13}	9.35×10^{12}	8.82×10^{12}	2.17×10^{13}	7.13×10^{11}	5.34×10^{11}
Dissolved Gases	- -	LDL	8.89×10^{8}	2.98×10^{9}	2.61×10^{8}	(2)	3.38×10^{8}	4.21×10^{7}
Gaseous Effluents								
2005								
Noble Gases	7.17×10^{12}	1.95×10^{11}	LDL	3.14×10^{11}	2.80×10^{11}	5.80×10^{10}	LDL	1.49×10^{13}
Halogens	LDL	LDL	3.34×10^{5}	8.91×10^{4}	3.23×10^{7}	LDL	1.02×10^{8}	5.39×10^{9}
Particles	2.70×10^{6}	7.61×10^{5}	5.36×10^{5}	1.37×10^{6}	7.43×10^{6}	4.33×10^{5}	2.08×10^{9}	8.08×10^{8}
Tritium	5.36×10^{10}	5.74×10^{12}	8.93×10^{11}	1.12×10^{12}	6.58×10^{10}	7.96×10^{11}	3.86×10^{11}	1.64×10^{12}
Carbon-14 [3]						6.12×10^{10}		

				2006				
Noble Gases	3.03×10^{12}	8.12×10^{11}	7.29×10^{10}	1.30×10^{13}	2.29×10^{10}	1.08×10^{11}	4.38×10^{12}	3.04×10^{13}
Halogens	LDL	2.56×10^{6}	5.02×10^{5}	6.22×10^{5}	1.98×10^{5}	LDL	6.87×10^{8}	2.65×10^{10}
Particles	1.23×10^{6}	1.29×10^{6}	1.21×10^{6}	8.65×10^{5}	1.25×10^{7}	1.39×10^{5}	1.68×10^{9}	3.54×10^{9}
Tritium	7.84×10^{9}	6.19×10^{12}	7.07×10^{11}	7.67×10^{11}	9.54×10^{10}	6.74×10^{11}	6.87×10^{11}	1.13×10^{12}
Carbon-14[3]						6.70×10^{10}		
				2007				
Noble Gases	LDL	2.05×10^{11}	2.34×10^{11}	1.41×10^{13}	4.19×10^{10}	3.19×10^{11}	1.23×10^{13}	2.53×10^{13}
Halogens	LDL	6.06×10^{2}	2.57×10^{6}	1.39×10^{7}	1.14×10^{6}	LDL	1.79×10^{9}	1.37×10^{10}
Particles	2.12×10^{6}	2.00×10^{6}	1.46×10^{6}	1.55×10^{6}	5.02×10^{6}	2.19×10^{6}	8.06×10^{9}	2.45×10^{8}
Tritium	6.98×10^{9}	4.36×10^{12}	1.04×10^{12}	5.36×10^{11}	9.66×10^{10}	7.46×10^{11}	1.15×10^{12}	5.95×10^{11}
Carbon-14[3]	- -	2.99×10^{10}	4.53×10^{11}	1.22×10^{12}	1.20×10^{12}	4.45×10^{10}	1.99×10^{11}	2.91×10^{11}

[1] Plant definitively shut down since April 30th 2006. The effluents released are due to tasks in preparation for dismantling.

[2] The liquid releases do not entrain dissolved gases since these are eliminated during the process of treatment.

[3] Determination is required as from 2007.

LDL: Lower detection level.

Table 14.
Activity of radioactive effluents from El Cabril (Bq).

Gaseous effluents	Total Alpha	Total Beta	Gamma	Tritium	Carbon-14
2005	4.33×10^{3}	8.76×10^{4}	2.68×10^{3}	7.21×10^{6}	2.42×10^{7}
2006	4.95×10^{3}	7.16×10^{4}	LDL	1.66×10^{7}	1.96×10^{7}
2007	5.01×10^{3}	5.84×10^{4}	LDL	2.59×10^{7}	5.10×10^{7}

24.3. Assessment of compliance

The responsibility assigned by the Spanish standards to the licensees of nuclear facilities includes aspects relating to the control of liquid and gaseous radioactive effluents. The Spanish facilities are considered to correctly fulfil the requirements established in article 24 of the Convention, as regards both the application of the ALARA criterion and the measures implemented to protect the workers, the programmes for the surveillance, limitation and control of effluents and the environmental surveillance programmes.

Article 25
Emergency preparedness

1 Each Contracting Party shall ensure that before and during operation of a spent fuel or radioactive waste management facility there are appropriate on-site and, if necessary, off-site emergency plans. Such emergency plans should be tested at an appropriate frequency.

2 Each Contracting Party shall take the appropriate steps for the preparation and testing of emergency plans for its territory insofar as it is likely to be affected in the event of a radiological emergency at a spent fuel or radioactive waste management facility in the vicinity of its territory.

25.1. Assignment of responsibilities in emergency situations

The Basic Nuclear Emergency Plan (PLABEN), which establishes the planning and preparation for emergency situations, determines the different State, Autonomous Community and Local Administration competent authorities and public organisations concerned in cases of emergency and in relation to radioactive waste management.

The main competent authorities and public organisations are as follows:

- ✓ The Ministry of the Interior, which is assigned the responsibilities of the State in all matters relating to civil defence.
- ✓ The Nuclear Safety Council is assigned the responsibilities corresponding to it as the sole competent organisation for nuclear safety and radiological protection.
- ✓ The regional and local Administrations (Autonomous Communities, Town Councils and provincial Government Offices affected by and included in the corresponding Nuclear Emergency Plans) are assigned the responsibilities corresponding to them in relation to civil defence, public security, health, transport and communications, supply and shelter, among others.
- ✓ The Empresa Nacional de Residuos Radiactivos (ENRESA) is responsible for providing support for the civil defence services in the manner and under the circumstances that might be required.

The international bodies acting as intermediaries in the event of an emergency are indicated below, in sub-section 25.5 of the present report.

25.2. Legislative and regulatory framework governing emergency situations

In the Spanish State the planning and preparation for situations of nuclear emergency are governed by the Basic Nuclear Emergency Plan (PLABEN) and by the Regulation on Nuclear and Radioactive Facilities. The Law creating the Nuclear Safety Council (CSN), the Basic Standards on Civil Defence and Self-Protection, the Royal Decree creating the Empresa Nacional de Residuos Radiactivos S.A. (ENRESA) and the Basic Directive on the Planning of Civil Defence for the Risk of Accidents in the Transport of Hazardous Goods by Road and Rail include general provisions on emergencies that might occur at nuclear or radioactive facilities or in the

transport of radioactive materials. The Royal Decree approving the protocol on the intervention of the Military Emergencies Unit (MEU) also contemplates the intervention of this unit in the event of serious situations arising, among other things, from nuclear and radiological risk.

✓ **Basic Standard on Civil Defence**

This standard, approved by Royal Decree on April 24th 1992, determines the distribution of competences for preparation and planning for emergencies of different types among the entities making up the Spanish State: the Government of the Nation (competence of the State), the Autonomous Communities and local entities.

✓ **Basic Standard on Self-Protection**

This standard was approved by the Government, in response to a proposal by the Ministry of the Interior, following a report by the National Commission on Civil Defence (including the representation of the Nuclear Safety Council), published in the Official State Gazette by means of Royal Decree 393/2007, of March 23rd 2007.

The basic standard on Self-Protection is applicable to centres, establishments and facilities dedicated to activities that might give rise to emergency situations. As regards nuclear and radioactive installations, it is established that their self-protection plans (site emergency plans) will be regulated in accordance with the requirements of the Regulation on Nuclear and Radioactive Facilities.

✓ **Basic Nuclear Emergency Plan (PLABEN)**

The Basic Nuclear Emergency Plan was approved by the Government, in response to a proposal by the Ministry of the Interior, during the Cabinet Meeting held on June 25th 2004, following a favourable report by the Nuclear Safety Council and the National Commission for Civil Defence, and was published by way of a Royal Decree from the Ministry of the Interior on July 14th 2004.

The PLABEN is the guideline, with the ranking of a directive, that contains the essential standards and criteria for the drawing up, effective implementation and maintenance of the efficiency of the civil defence nuclear emergency plans, responsibility for which rests with the General State Administration, with collaboration by the other public Administrations. Its objectives are to reduce the risk or mitigate the consequences of accidents at the point of origin and to prevent, or at least reduce to the extent possible, the adverse effects of ionising radiations for the population and property, for which reason the plan defines the actions foreseen by the Public Authorities to provide a prompt and adequate protection for both. Fundamentally the PLABEN contains the radiological criteria defined by the CSN for the planning of emergency response at nuclear facilities.

As regards practical application, the PLABEN is developed through the following:

- Nuclear Facility Site Emergency Plans (SEP)
- Nuclear power plant off-site nuclear emergency plans (OEP)
- Municipal nuclear emergency action plans (MNEP)
- Response and Support Centre Nuclear Emergency Plan (RSCNEP), which defines the national organisation, structure and functions for emergency situations.

✓ **Law Creating the CSN**

Law 33/2007, of November 7th, reforming the law by which the CSN was created, Law 15/1980, of April 22nd 1980, modifies the articles of the latter, extending the

coverage of the functions performed by the CSN, specifically as regards the functions and responsibilities of the Council in emergency situations. Among other things, it guarantees the participation of society in the operation of the CSN and the right to file appeals, in keeping with the requirements of the Aarhus Convention. This reform also takes into account Law 27/2006, of July 18th 2006 on the rights of the members of the public to access information.

✓ **Regulation on Nuclear and Radioactive Facilities**

Royal Decree 35/2008, of January 18th 2008, has modified Royal Decree 1836/1999 by the Ministry of Industry and Energy, by which the said Regulation was approved, the latter requiring that in order to obtain the mandatory authorisations for the use or operation of a nuclear or radioactive facility, the applicant draw up and submit an Emergency Plan, which will be approved on granting such authorisations.

In Spain there is no facility having the management of spent fuel as its main objective; there is, however, a facility whose main objective is the management of radioactive wastes, which according to the Spanish regulations is categorised as a nuclear facility. Consequently, like the nuclear power plants, this facility is required to have a Site Emergency Plan, which is currently approved by the Ministry of Industry, Tourism and Trade following a report by the CSN, which assesses this plan in the light of specific national and international standards.

✓ **Royal Decree on the ordering of the activities of the Empresa Nacional de Residuos Radiactivos S.A. (ENRESA) and their financing.**

Royal Decree 1349/2003, on the ordering of the activities of ENRESA and their financing, assigns to this company the mission of acting in support of the civil defence services, in the manner and circumstances required, in the event of nuclear or radiological emergencies.

✓ **Basic Directive on the Planning of Civil Defence for the Risk of Accidents in the Transport of Hazardous Goods by Road and Rail.**

This Directive, which was approved by Royal Decree 387/1996, of July 1st 1996, establishes the basic elements for the planning for emergencies at State Administration and Autonomous Community level, the situations for the management of emergencies and the coordinating bodies, applicable in the case of accidents in the transport by road and rail of hazardous goods, including radioactive materials (Class VII hazardous goods).

25.3. Application of emergency preparedness measures, including the role of the regulatory body and other entities

✓ Site Response Level

The activities for the preparation for and response to emergency situations at this level are contained in the Site Emergency Plans, these being mandatory documents for application for and granting of the operating Licence for any nuclear or radioactive facility.

The objective of these Plans is to set out the actions contemplated by the licensee of the nuclear facility to reduce the risk of a radiological emergency and, in the event of such an emergency, to limit the release of radioactive material to the environment.

In this respect, the licensee of the facility is responsible for operating the plant correctly, in accordance with its technical specifications and operating procedures for normal and accident situations, and for promptly and accurately notifying the Public Authorities of the occurrence or imminent occurrence of a radiological emergency category.

In the Site Emergency Plans of nuclear power plants, the possible accidents that might occur during their operation are classified in four emergency categories, established depending on the conditions of the plant and taking into account the maximum amount of radioactive material that might be released off site, assuming a pessimistic evolution of the initiating event.

Analogously, at the radioactive waste management facility existing in Spain, emergency situations are classified in three categories, in increasing order of seriousness and decreasing order or probability: Category I (Emergency Pre-Alert), Category II (Emergency Alert) and Category III (Site Emergency). This classification has been based on the accident and risk analyses performed on the facility, from which it has been deduced that there could be no release of radioactive materials off site in an amount such that the adoption of an emergency plan outside the facility might be necessary.

✓ **Off-Site Level of Response**

At this level the activities involved in preparing for and responding to emergencies are established in the following:

- The nuclear power plant off-site Nuclear Emergency Plans, developed in turn in the action procedures of the respective operating groups and including among other things the municipal nuclear emergency action plans.
- The Central Response and Support Level configures the model for response at national level for the mobilisation of the resources and capabilities of the Spanish State and the coordination of whatever international aid might be necessary.

The management of national resources to support the off-site Nuclear Emergency Plans is carried out through the Directorate General for Civil Defence and Emergencies (DGVD&E), belonging to the Ministry of the Interior, as the organisation in charge of coordinating all the necessary support from the different Bodies of the central and other Administrations, and the Nuclear Safety Council (CSN) for all aspects relating to nuclear safety and radiological protection, the latter coordinating in turn all the different public or private organisations and companies whose participation is necessary to attend to the specific functions attributed to it.

✓ **CSN Preparation for and Response to emergency situations.**

The actions taken by the CSN through its Emergency Response Organisation (ERO) during an actual situation of emergency take priority over all other CSN activities. Consequently, whenever considered necessary by the Emergency Division, all the resources of the Organisation are made available to the ERO and all other activities being performed at the time are immediately suspended.

The ERO acts independently from the regulatory and control function assigned to the CSN and shall have the following exclusive functions:

- Collaboration in taking the emergency situation to a safe condition.

- Contributing to mitigating the radiological consequences for persons, property and the environment generated by the accident underlying the emergency situation.
- Informing and advising the authorities in charge of directing the applicable emergency plan on the adoption of measures to protect the population.
- Informing the population of the risks associated with the emergency situation.
- Compliance with international commitments regarding prompt notification and mutual assistance, to the extent that this affects the CSN.

In order to meet all these functions, the CSN has developed an Emergency Action Plan, revision 4 of which was approved on April 27th 2005, which includes a special Organisation of the Council's human resources and the availability of specific resources and tools helping in the processes to be carried out by this organisation. The Emergencies Room (SALEM) is the place where the Emergency Organisation of the CSN performs its function and where the tools required to perform its functions are to be found. In addition, the CSN Emergency Organisation has stand-by personnel permanently assigned to it, in weekly shifts, responsible for responding from the SALEM in the initial moments of an emergency and for proceeding to locations affected by the emergency if so indicated by the management.

Annex E includes a summary description of the CSN Action Plan and of the ERO for emergency response.

25.4. Initial and on-going training: Drills and Exercises

The general aspects of initial and on-going training for those required to act in the event of an emergency, and the planning and performance of exercises and drills, are included basically in the PLABEN and in the directives through which it is developed, approved by the resolution of the Sub-Secretariat of the Ministry of the Interior on June 7th 2005, i.e., the directive on previous public information, the directive on the initial and on-going training of those required to intervene and the directive on nuclear emergency plan exercises and drills programmes.

Emergency response personnel initial and on-going training activities are subject to planning, this being specified in annual programmes for both the personnel of the nuclear facilities and the personnel of the public administrations required to intervene to address emergencies. These programmes include theoretical and practical courses, training exercises and partial and general drills aimed at verifying the degree of preparedness of the personnel, systems and support resources.

As regards the low and intermediate level radioactive waste disposal facility, a mandatory site emergency drill is performed annually. The objective of this emergency drill is to check the suitability of the facility's Site Emergency Plan through the performance of a set of activities covering the majority of the radiological emergency response actions established in the said Plan.

The CSN monitors the development of the annual emergency drills at all the nuclear facilities through the activation and actuation of the ERO at the SALEM. The activities performed during these drills are carried out under conditions of maximum realism, applying the procedures in place for the activation and actuation of the ERO operating groups. Furthermore, these drills include practice of the coordination between the CSN and the corresponding Provincial and National Authorities, the aim being to verify the general efficiency of the existing procedures.

In addition, the CSN sends inspectors to the sites for checks on the operability of the Site Emergency Plan and in situ tracking of the performance of the drills, the objective being to maintain

control over such performance and require the facility to implement whatever corrective actions might be established as a result of the observations made.

25.5.International arrangements, including those with neighbouring countries where necessary

The Spanish State subscribes to the Convention on the Prompt Notification of Nuclear Accidents, for which the point of contact is the CSN SALEM, and the Convention on Mutual Assistance in the event of Nuclear Accidents or Radiological Emergencies, for which the point of contact is the Operations Coordination Room (SACOP) of the DGCD&E.

Furthermore, as a Member State of the European Union, the Spanish State is required to establish in its territory, and with respect to other States and the Commission, the requirements arising from the Decision of the Council 87/600/EURATOM regarding Community arrangements for the prompt exchange of information in the event of nuclear accidents or radiological emergencies, known as the ECURIE agreements or arrangements. The CSN is the Competent National Authority for ECURIE and the SALEM the National Point of Contact.

In addition, the Spanish and Portuguese States have signed and maintain a Bilateral Agreement on the Cross-Frontier Nuclear Safety of Nuclear Facilities, which contemplates specific notification and information exchange activities in the event of a nuclear accident or radiological emergency occurring or having effects on the respective national territories of the two States. The CSN is the Competent National Authority for the application, maintenance and development of the aforementioned Bilateral Agreement and the SALEM the National Point of Contact.

Spain participates actively in the internationally established programmes of exercises and drills: the exercises included in the European Union's ECURIE system, the OECD Nuclear Energy Agency's INEX programme of exercises, the CONVEX exercises of the IAEA and the bilateral exercises with Portugal. The CSN participates in these exercises, in certain cases activating its ERO, in coordination with the emergency Civil Defence resources and those of the Government of the Nation. In these exercises, in addition to verifying the international procedures for the notification of nuclear emergencies and information exchange, the national procedures for the coordination of institutions are also put into practice, especially those relating to monitoring of the situation, decision-making and the supply of information to the media and the population in general.

25.6. Assessment of compliance

From what has been set out above it may be deduced that in Spain the planning for and response to radiological emergency situations are in accordance with the requirements of Articles 25.1 and 25.2 of the Convention.

The Spanish Integrated Emergency Plan, made up of the site emergency plans of the nuclear facilities, the off-site response level plans, the CSN emergency action plan and adequate instruments for the coordination of and interfaces between them, imply compliance with the requirements of article 25.1 of the Convention, inasmuch as these plans are regularly tested through the periodic performance of partial and integrated exercises and drills, as has been described above.

These instruments for planning and response, along with the International and Bilateral Agreements subscribed by the Spanish State in relation to emergencies, guarantee compliance with the requirements of article 25.2 of the Convention.

Certain activities that improve the general capacity of the Spanish State to respond to nuclear emergencies have recently been implemented, among them the following:

- ✓ Implementation of the current Basic Nuclear Emergency Plan, revised, among other things, to introduce the new radiological criteria defined at international level, including the incorporation of the philosophy of levels of intervention based on avoided dose. Furthermore, the new structuring of the national administration, defined in Law 6/1997, on the Organisation and Operation of the General State Administration, has been incorporated.
- ✓ Approval and implementation of the Off-Site Nuclear Emergency Master Plans of territories housing nuclear power plants, for their adaptation to the requirements of the PLABEN
- ✓ Implementation of the CSN Emergency Action Plan, which restructures the emergency response organisation, increasing its operability in such situations. Annex E describes the CSN organisation for emergency situations.
- ✓ Development by the CSN of a data-processing application, known as GEMINIS, for the operational management and maintenance of the equipment available for the detection and measurement of radiations in nuclear and radiological emergency situations, attached to the off-site nuclear emergency plan response level and implemented at various locations strategically distributed throughout the territory to address radiological emergencies.
- ✓ Implementation of a new dosimetry system for the personnel intervening in nuclear or radiological emergencies.
- ✓ Architectural remodelling of the CSN SALEM and implementation of a new Communications Network between the SALEM and the nuclear facilities and key organisations intervening in the management of nuclear or radiological emergency situations, increasing the quality and reliability of communications.

Article 26
Decommissioning

Art. 26. Decommissioning

Each Contracting Party shall take the appropriate steps to ensure the safety of decommissioning of a nuclear facility. Such steps shall ensure that:

(i) qualified staff and adequate financial resources are available;

(ii) the provisions of Article 24 with respect to operational radiation protection, discharges and unplanned and uncontrolled releases are applied;

(iii) the provisions of Article 25 with respect to emergency preparedness are applied; and

(iv) records of information important to decommissioning are kept.

According to the Spanish legislation, dismantling is the process whereby the licensee of a facility, having obtained the corresponding authorisation, undertakes the activities of decontamination, disassembly of equipment, demolition of structures and removal of materials in order to ultimately allow for the complete or restricted release of the site. The dismantling process culminates with a declaration of decommissioning, which releases the licensee of the facility from his responsibility

as operator and, in the case of restricted release of the site, defines the applicable limitations on use and the party responsible for their maintenance and surveillance of their compliance[1].

Annex B to this report includes information on the licensing processes for dismantling.

26.1. Organisation and responsibilities for dismantling

The organisation and responsibilities for the dismantling of nuclear and radioactive facilities are legally defined by Royal Decree 1836/1999, of December 3rd, approving the Regulation on Nuclear and Radioactive Facilities, and Royal Decree 1349/2003, of October 31st, on the ordering of ENRESA's activities and their financing.

In accordance with article 4, section e) of this last Decree, the responsibility for the management of operations deriving from the decommissioning of nuclear and radioactive facilities corresponds to ENRESA. For its part, the Regulation on Nuclear and Radioactive Facilities indicates that on expiry of the operating permit of a nuclear facility, the responsibility for its decommissioning is initially to the licensee of the installation who, prior to the granting of the corresponding authorisation, undertakes the so-called pre-dismantling activities. In order for the dismantling authorisation to be granted, the licensee of the operating permit must previously have conditioned the radioactive waste generated during its operation (art. 28) in accordance with the acceptance criteria of the disposal facility to which they are to be transferred. Secondly, the licensee of the facility must have unloaded the fuel from the reactor and from the irradiated fuel storage pools or otherwise have a spent fuel management plan approved by the MITYC, following a report from the CSN (art. 28).

These obligations are specified on the basis of the aforementioned legal provisions and are also described in detail in a contract between ENRESA and the owners of the nuclear power plants, approved by the MITYC. The contract establishes the responsibilities and the scope of the tasks to be carried out by the licensee to plan for the dismantling of the plant by ENRESA, the latter being responsible for drawing up the dismantling and decommissioning plan for each nuclear power plant, following its definitive shutdown, and for submitting this plan to the MITYC for its approval. In this case, on completion of the pre-dismantling activities by the licensee and awarding of the corresponding dismantling authorisation, ENRESA undertakes responsibility for the performance of the dismantling and decommissioning activities set out in the authorised plan, as licensee of the facility. For this it is necessary for ownership of the plant to be transferred from the licensee to ENRESA. Following this, ENRESA becomes the licensee of the facility during the performance of the dismantling activities and up to the granting of its declaration of decommissioning, at which moment the site, now free from the facility, is returned to its owner, the original licensee of the installation. In practice, the transfer of ownership is authorised by the MITYC at the same time as the authorisation for dismantling is issued. The procedures and mechanisms adhered to for this transfer of ownership of the facility are established contractually between the licensee and ENRESA, its terms being formalised in the so-called transfer of ownership document.

26.2. Financing of dismantling

The dismantling of nuclear power plants and uranium concentrate and nuclear fuel manufacturing facilities is financed with part of the fund that the companies owning such activities transfer to ENRESA during the operating lifetime of their installations, in payment for the services ren-

[1] *Regulation on Nuclear and Radioactive Facilities, approved by Royal Decree 1836/1999, of December 3rd, and as modified by Royal Decree 35/2008, of January 18th.*

dered by the latter pursuant to Royal Decree 1349/2003, of October 31st, on the ordering of ENRESA's activities and their financing. This same Royal Decree requires and regulates the contracts established between ENRESA and the licensees of this type of nuclear facilities, which should establish the formulae for payment.

In general, the financing arrangements for radioactive waste management and for dismantling are defined in and regulated by the Electricity Industry Act, Law 54/1997, of November 27th. In the second part of its sixth additional provision, created by Law 24/2005, of November 18th, on reforms to promote productivity, article eight, it is established that the amounts corresponding to the provision for the financing of the costs of dismantling and decommissioning of nuclear power plants attributable to the operation of these facilities as from March 31st 2005 shall be financed by the licensees of the plants during their operation. In this respect, the costs considered to be attributable to operation after March 31st 2005 shall be the proportional part of the costs of dismantling and decommissioning corresponding to the period of plant operation remaining as of that date. Likewise, and as set out in its section 22.2, the Law establishes that the costs attributable to the operation of the nuclear power plants prior to April 1st 2005 shall be considered as diversification and guaranteed supply costs.

In the case of other non-commercial nuclear facilities, such as those involved in research, the payment for the services rendered by ENRESA shall be through billing.

Section F of this report, article 22 (Human and Financial Resources), contains complementary information on the financing system. Section 22.2 describes the method of financing and of ensuring the availability of financial resources for spent fuel and waste management during the lifetime of a facility and for its decommissioning via the Fund, to which are applied also the financing needs of dismantling and decommissioning.

26.3. Radiological protection and emergencies during dismantling

Nuclear facilities in the dismantling phase continue to be considered nuclear facilities until such time as their declaration of decommissioning is granted. They continue to be subject to a system of inspection and control similar to that applied to other nuclear facilities throughout the entire period in which activities are performed for their dismantling. This control and inspection is the responsibility both of the CSN and of the other competent authorities.

The requirements of the section referring to compliance with articles 24 «Operational radiological protection, releases and non-planned and uncontrolled emission» and 25 «Emergency preparedness» of this convention are fully applicable during the dismantling phase of nuclear facilities.

The site emergency plan applicable during dismantling sets out the measures contemplated by the licensee and the assignment of responsibilities to address accident conditions, with the objective of mitigating their consequences, protecting the personnel of the facility and immediately notifying the competent bodies of their occurrence. Like the rest of the official documents, including the Radiological protection manual, the Technical specifications and the Safety study, the plan is based on an analysis of the risks implied by the facility and of their evolution as the foreseen dismantling activities are performed.

26.4. Documentary archive for dismantling and decommissioning

The obligation of the licensees of nuclear facilities to adequately compile and conserve information of relevance for decommissioning during the operational phase is contained in the RNRF.

This Regulation requires all authorised nuclear facilities to possess a document specifically setting out the forecasts for its dismantling and decommissioning (art. 20 j RNRF) and requires also that this be part of the official operating documentation.

In addition, on February 5th 2003 the CSN issued Instruction IS-04, regulating the transfer, filing and custody of documents corresponding to the radiological protection of the workers, the public and the environment prior to the transfer of ownership of nuclear power plants for dismantling and decommissioning.

The agreements on transfer to ENRESA of the ownership of facilities to be decommissioned establish contractually the mechanisms and procedures allowing it to access all the operating archives of the facility. As a result, ENRESA may use whatever available information it considers to be relevant for the design and performance of the dismantling and decommissioning plan for the facility.

Aspects regarding the custody of documents following the decommissioning of the facility are included in Section H, article 17 (Institutional measures following decommissioning).

26.5 Assessment of compliance

From what has been set out above it may be concluded that Spain fulfils the requirements of this article of the Convention.

Section G

Safety in the management of spent nuclear fuel

Section G. Safety in the management of spent nuclear fuel

This section deals with the obligations deriving from articles 4 to 10 of the Convention.

Article 4
General safety requirements

Article 4: General safety requirements

Each Contracting Party shall take the appropriate steps to ensure that at all stages of spent fuel management, individuals, society and the environment are adequately protected against radiological hazards.

In so doing, each Contracting Party shall take the appropriate steps to:

(i) ensure that criticality and removal of residual heat generated during spent fuel management are adequately addressed;

(ii) ensure that the generation of radioactive waste associated with spent fuel management is kept to the minimum practicable, consistent with the type of fuel cycle policy adopted;

(iii) take into account interdependencies among the different steps in spent fuel management;

(iv) provide for effective protection of individuals, society and the environment, by applying at the national level suitable protective methods as approved by the regulatory body, in the framework of its national legislation which has due regard to internationally endorsed criteria and standards;

(v) take into account the biological, chemical and other hazards that may be associated with spent fuel management;

(vi) strive to avoid actions that impose reasonably predictable impacts on future generations greater than those permitted for the current generation;

(vii) aim to avoid imposing undue burdens on future generations.

The measures for compliance with these and other requirements of this Section are presented generally when they are applicable to all or several phases of spent fuel management, and specifically when required in view of the peculiarities of the phase of management or of the current and foreseen situation of temporary spent fuel management.

The spent fuel assemblies generated at the Spanish nuclear power plants are currently being temporarily stored in the pools associated with the operating reactors, with the exception of those that were sent abroad for reprocessing and those that are in the temporary storage facility at the Trillo plant.

In the case of José Cabrera NPP, which was definitively shut down in April 2006, a temporary storage facility that has already been constructed and authorised will begin operation prior to the initiation of dismantling, scheduled for 2009.

The temporary storage facilities at both the Trillo and José Cabrera plants are based on the use of dry storage casks, of North American technology but each of a different design. In the first of these cases the so-called ENSA-DPT metallic dual purpose casks are used (approved for both storage and transport). In the second, the cask used is the concrete and metal HI-STORM 100 Z storage cask. Both systems are described in section D1 and in sub-section 7.2.

Finally, mention is made of the future centralised temporary storage facility contemplated in the General Radioactive Waste Plan (GRWP), described in sub-section 6.1.

Described below are the measures adopted in relation to compliance with the safety requirements specified in sections i) to vii) of this article, generally or specifically for the facilities referred to above, as appropriate.

4.1. Measures to guarantee the maintenance of subcritical conditions and heat removal

The maintenance of subcritical conditions and of adequate heat removal at temporary spent fuel storage facilities are safety requirements forming part of the design criteria and bases. These requirements are incorporated through the application of technical and administrative or control systems, subject to analysis, assessment and surveillance by the CSN.

The description of the measures adopted to comply with these requirements is contained in the mandatory documentation pertaining to the process of authorising nuclear facilities in their different phases, specifically in the corresponding Safety Studies (SS) and in the Operating Technical Specifications (OTS), as indicated in section E of this report. Summarised below are the bases for the criteria applied for each of the aforementioned types of storage:

- ✓ In the existing spent fuel storage pools the design criteria used take the standard of the country of origin of the nuclear power plant design as a reference, specifically US 10CFR50 (Appendix B), except in the case of Trillo nuclear power plant, of Siemens/ KWU technology, which is governed by the criteria issued by the German BMU.
- ✓ The criteria used in the design of the temporary dry storage facilities at the Trillo and José Cabrera nuclear power plants, and in the design of the storage casks themselves, of American technology in both cases, are those contained in US 10 CFR 72 and in the specific IAEA standards (Safety Series 116 “Design of spent fuel storage facilities”), as well as in the applicable national standards.
- ✓ As regards the requirements for the licensing of the temporary storage facility, in the light of the generic design assessment carried out by the CSN and of the analysis of standards performed for this purpose, it has been established that in addition to the requirements contained in the specific IAEA standards, consideration should be given to those associated with the USNRC 10CFR 72 standards, because of their completeness, as indicated in Article 8 of this Report.

4.1.1 Measures to guarantee the maintenance of subcritical conditions

In general, the design criterion adopted for the maintenance of subcritical conditions, both for the storage of spent fuel in the pools and for its storage in the dry storage casks used at the Trillo and José Cabrera facilities and at the planned centralised temporary storage facility, is that the neutron multiplication factor (Keff) be lower than 0.95 under normal operating and accident conditions and in the face of uncertainties and the most reactive situation.

- ✓ In the temporary storage pools associated with the nuclear reactors, the methods used to maintain conditions of subcriticality under normal, off-normal or accident conditions are as follows:
  - ➪ Maintenance of a safe geometric configuration,
  - ➪ Use of neutron poisons (dissolved in the water or integrated in the structures of the storage racks),
  - ➪ Limitation of initial enrichment and credit given to the degree of burnup. The application of these methods varies from one facility to the next, as specified below.

At PWR plants, credit for the degree of burnup was incorporated with the re-racking operation carried out to increase the capacity of the pools, these being divided into two regions, one known as region II for the storage of fuel exceeding a given degree of burnup, depending on initial enrichment, and another known as region I, where both fresh fuel and irradiated fuel not reaching the conditions for storage in region II may be stored. At BWR plants, the 5% subcriticality margin is maintained by the measures described in the previous paragraph.

- ✓ The methods used to prevent criticality in the dry storage casks used at the sites of the Trillo and José Cabrera plants are based on the inherent geometry of the rack housing the fuel, the incorporation of neutron absorbing panels fixed permanently to the rack, the administrative limits on the maximum U-235 enrichment of the fuel and the minimum concentration of boron dissolved in the fuel loading and unloading water in the ENSA-DPT cask or the MPC capsule, as appropriate.
- ✓ In the case of the planned centralised temporary storage facility, the measures to prevent criticality are based on the requirements of 10 CFR 72.124 included specifically for this purpose, through the maintenance of a favourable geometry in the storage capsules and the limitation of the number of fuel assemblies per capsule, including safety margins for parameters determining criticality in keeping with the uncertainties of the data and methods of analysis, as well as through the implementation of means for criticality surveillance and alarms in areas in which the fuel is handled or stored in transit prior to being transferred to the storage tube.

4.1.2 Measures to guarantee adequate heat removal

- ✓ In the temporary fuel storage pools, the cooling systems fulfil the safety functions of removing the decay heat generated without exceeding the temperature limits established and of maintaining a minimum level of water above the fuel assemblies in any situation, thus guaranteeing adequate shielding, and are designed in accordance with the applicable criteria of 10 CFR 50 (2, 4, 5, 44, 45 46, 61 and 63 of Appendix B of 10CFR 50). The design modification aimed at increasing the storage capacity of the East pool at Cofrentes NPP, requested in late 2007, implied analysis and calculation of the residual heat and the re-assessment of the cooling systems, as was previously the case for the re-racking operations carried out all the other pools, the necessary measures being adopted.

- ✓ As regards the storage casks, these are designed to release the heat generated by the fuel assemblies to the atmosphere by means of passive convection, conduction and radiation mechanisms.
  - ➪ In the case of the ENSA-DPT storage casks in use at Trillo NPP, heat removal is facilitated by the aluminium disks of the rack and the bimetal stainless steel and copper fins arranged radially around the neutron shielding wrapper.
  - ➪ In the case of the HI-STORM-100 fuel storage casks in use at the José Cabrera plant, they are provided with a metal and concrete structure ventilated by natural convection that allows for the cooling of the capsule located in their interior.
- ✓ In the case of the centralised temporary storage facility, ventilation is planned to be accomplished by a system of cooling by natural air convection, designed such that the structures fulfilling a safety function remain below the temperature limits in order to guarantee their compliance, in accordance with the requirements of the standards considered to be applicable in 10 CFR. 72.122, which require that during storage the spent fuel cladding be protected against degradation (and the assessment criteria contained in NUREG-1567 and US. NRC ISG-11, Rev. 2)

  For this purpose, each storage vault will be equipped with an independent cooling circuit based on natural air convection. Air from outside will enter via the air inlets and will be channelled to the lower plenum of the vault. The air will circulate inside the double sleeve surrounding the storage tubes and the hot air will then be channelled to the upper plenum of the vault prior to being released to the exterior via the stack (concrete with a metallic upper part). A metallic plate located at an intermediate height inside the vault will guarantee separation between the lower inlet plenum and the internal volume of the vault.

4.2. Measures to ensure that the generation of radioactive wastes due to spent fuel management is kept as low as possible

The principle of minimising the generation of radioactive wastes has been included in the Spanish legal framework with the modification of article 38 of the Nuclear Energy Act through Law 33/2007, of November 7th, which in referring to the Organisations responsible for the management of nuclear and radioactive facilities states as follows:

> *Likewise, appropriate measures shall be adopted in all the stages of spent fuel and radioactive waste management, ... such that waste production, in terms of quantity and activity, be as low as possible, in keeping with the practice existing at the time.*

It is considered that compliance with this requirement, as regards the management of spent waste, fundamentally impacts minimisation of the generation of secondary wastes resulting from the fuel storage pool water purification system, as well as the pool building ventilation and air cleaning system filters, both of which are related to the chemical and radiochemical composition of the pool water.

Control of the chemistry and radiochemistry parameters of the pool water is accomplished in part by means of the OTS's, and mainly by means of specific operating procedures, tracking of which by the CSN is carried out fundamentally via the periodic information, especially the monthly reports, provided by the nuclear power plants.

4.3. Measures to take into account the interdependence between the different stages of spent fuel management

The legal and regulatory framework existing in Spain establishes the responsibilities and bases for the development of interfaces between the different responsible parties involved in management, as established in Sections A and B, and specifically in sub-section B.1.2 on the contractual relationship between ENRESA and the producers, and the obligations of the parties as regards the information on spent fuel to be provided by the plant licensees to ENRESA.

The technical and administrative measures for the application of this requirement of interdependence, in order to guarantee the transfer of the spent fuel from one stage of management to the next under optimum safety conditions, have been set out in the Radioactive Waste and Spent Fuel Management Plans (RWSFMP's), this being one of the objectives established in the CSN Guideline on the criteria and contents for the drawing up of such plans, currently in the preparation phase.

The measures contemplated in the aforementioned guideline, which are being progressively implemented in the RWSFMP's, are oriented towards the following:

i) Provide a clear vision of the situation of the detailed inventory of fuel assemblies and activated materials in storage, as well as of their degree of characterisation.

ii) Optimise the behaviour of the spent fuel and of the facility itself.

iii) Define the objectives and scope of the irradiated fuel behaviour inspection and surveillance programmes.

iv) Define the additional characterisation measures of the spent fuels and different types of high level wastes necessary to meet the requirements of subsequent stages of management.

v) Compile and analyse the in-house experience of storage, identifying the safety aspects that need to be revised, in relation to the former and to the corresponding recording and filing systems, taking into account future documentary needs.

vi) Monitor developments in the country of origin of the technology, identifying applicable R&D activities and determining the need to address in-house R&D activities or to participate in international projects.

In order to determine future needs and homogenise information, the Electricity Industry and ENRESA are carrying out two Integrated Cooperation Projects at the Ascó and Sta. María de Garoña nuclear power plants, including the methodology of the support studies identified in the aforementioned CSN Guideline and the structure of a homogeneous database, with a view to the subsequent management of spent fuel and other core components, considered in the said Guideline as "special wastes".

4.4. Measures for the protection of persons, society and the environment

The legal framework existing in Spain and applicable to nuclear and radioactive facilities contains a series of provisions for the protection of persons and the environment against the risks deriving from such installations, as has been shown in Sections E and F of this report. These provisions apply to spent fuel management facilities, both those associated with the nuclear power plants and independent installations, since the latter would be treated as nuclear facilities with a limited operating period.

Notwithstanding the above, and given that fuel and waste management facilities may extend beyond the periods considered for other installations, article 39 of the Nuclear Energy Act, modified by the aforementioned Law 33/2997, incorporates this requirement, establishing the following in reference to the organisations responsible for nuclear and radioactive facilities:

> *"They shall likewise adopt appropriate measures in all stages of spent nuclear fuel and radioactive waste management in order to ensure that persons, property and the environment are adequately protected, in the present and in the future, against radiological risks, such that waste production, in terms of quantity and activity, be as low as possible, in keeping with the scientific practice existing at the time."*

The general measures adopted in relation to the protection of the workers, and those relating to the control and surveillance of effluents and the optimisation of radiological protection at nuclear power plants have been dealt with in previous reports.

4.5. Measures for the consideration of the biological, chemical and other risks potentially associated with spent fuel management

The prevention of biological, chemical and other risks, except radiological risks, associated with the management of spent fuel is regulated by the standards common to other industrial activities entailing such risks, constituted basically – as has been pointed out in Section E – by the legislation on the assessment of environmental impact, which transposes Community directives. The authorisation for spent fuel management facilities requires an environmental impact assessment taking such risks into account.

For its part, the protection of the personnel operating such facilities against non-radiological risks is regulated by Law 31/1995 on the Prevention of Occupational Risk.

It is also important to point out that events that in the opinion of the licensee might have significant public repercussions (including environmental variations and occupational accidents) are subject to the process of notification described in CSN Safety Guide No 1.6 on "Reportable events at Nuclear Power Plants".

4.6. Measures to prevent repercussions for future generations greater than those permitted for the generations of the present

This principle of protecting future generations does not initially have a direct impact on the spent fuel management facilities currently existing in Spain since these are temporary storage installations whose design and operating lifetime, although not explicitly defined in all cases, is associated with the lifetime of the operating nuclear power plants and, in the case of the José Cabrera plant, with the completion of its dismantling, as a result of which it is limited.

As regards the centralised temporary storage facility considered in the General Radioactive Waste Plan (GRWP) currently in force, the generic conceptual design of which (without a specific site, see section 6.2) has been favourably appreciated by the CSN, its design lifetime is 100 years and its operating lifetime 60 years, as a result of which it may be considered similar to or within the normal intervals of duration of other nuclear facilities. Consequently, the radiological

protection principles currently in force for the public and the environment may initially be considered applicable.

As has been pointed out above, the currently existing legal framework guarantees the protection of the public during periods of normal operation of the spent fuel management facilities already in place and others foreseen for the future.

Nevertheless, bearing in mind that fuel and waste management activities may involve several responsible parties and cover longer periods, Law 33/2007, reforming the law by which the CSN was created, has modified article 38 of the NEA, the text of which incorporates these provisions in reference to the organisations responsible for nuclear and radioactive facilities included partially in the previous section.

They shall likewise adopt appropriate measures in all stages of spent nuclear fuel and radioactive waste management in order to ensure that persons, property and the environment are adequately protected, in the present and in the future, against radiological risks and such that waste production, in terms of quantity and activity, be as low as possible, in keeping with the scientific practice existing at the time.

4.7. Measures to prevent undue burdens on future generations

As has been indicated in the previous section, this requirement does not initially have a direct impact on the spent fuel management facilities currently existing in Spain, since these are only the temporary storage installations associated with the nuclear power plants and those additional temporary storage facilities constructed on the sites of two plants (Trillo and Jose Cabrera). Consequently, they have a limited lifetime that is linked to the operating lifetime of the plant, when the facility in question serves as a support for its operation, or to the duration of dismantling when the facility serves as a support for this phase.

As regards the basic and additional solutions for the medium and long-term management of spent fuel contemplated in the 6th GRWP currently in force, the burdens for future generations inherent to the operating period or lifetime of the facility would be related fundamentally to a) the assignment of responsibilities and b) the availability of funds for the financing of the activities involved, as regards maintenance, control and surveillance needs.

In relation to these aspects, the existing legal framework assigns to ENRESA the responsibility for ensuring the long-term management of all facilities serving for the storage of wastes and spent fuel and contains the provisions for the setting up, application and management of the fund for the financing of the measures required for the maintenance and surveillance of this type of installations.

4.8. Assessment of compliance

From what has been set out in each of the previous sections it may be stated that Spain fulfils the requirements relating to the maintenance of conditions of subcriticality and heat removal, and that it has a legal framework appropriate for the safe operation of the currently existing spent fuel management facilities, as regards protection of the workers, the public and the environment.

Likewise, the legal framework establishes the bases for consideration of the interdependencies between the stages of management and minimisation of waste generation as a result of spent fuel

management, although the application of these principles may require additional actions, already under development.

The existing legal framework also incorporates the requirement regarding the protection of future generations, although its application might require additional regulatory and legislative developments, as well as a clearer definition of the policies and strategies of solution for long-term spent fuel management.

Article 5
Existing facilities

Article 5: Existing facilities

Each Contracting Party shall take the appropriate steps to review the safety of any spent fuel management facility existing at the time the Convention enters into force for that Contracting Party and to ensure that, if necessary, all reasonably practicable improvements are made to upgrade the safety of such a facility.

5.1. Changes to existing facilities.

Existing storage facilities are those referred to at the beginning of this Section and detailed in Section D, sub-section D.1 of this report. The only significant changes made are those indicated below:

a) As regards fuel storage pools, the only on-going modification is being made at the Cofrentes nuclear power plant and consists of replacing the original stainless steel storage racks with other high density units of borated steel as an absorbent material allowing the storage capacity to be increased by 1,201 additional positions for fuel assemblies. This measure puts back the date of saturation of the pool until the year 2014. This operation completes the re-racking of the pools of the eight operating reactors, a process that was largely carried out during the last decade, as described in previous reports.

b) As regards the temporary dry cask storage facility at the Trillo nuclear power plant, which has been in operation since 2002, normal operation has continued. As of the end of 2007 there were 14 ENSA-DPT type casks in storage, two more of the same type will be transferred to the facility in 2008 and six more, approved for 45,000Mwd/tU and six years of cooldown, are currently pending. These will provide a sufficient capacity until the year 2011, after which the feasibility of other options will be analysed (such as the feasibility of a modification for fuel of 49,000Mwd/tU and 9 years of cooldown, authorised since 2004, and 45,000 Mwd/tU and 6 years of cooldown, as indicated in the 2nd Joint Convention Report).

c) As has been pointed out above, a new facility for the temporary storage of casks at the José Cabrera NPP has been licensed during this period for the emptying of the fuel pool, with a view to initiating the dismantling of the plant, scheduled to begin in 2009. The 277 fuel assemblies generated since 1982 will be stored in 12 casks, to which will be added a further 4 for the storage of core internals and other intermediate level wastes that cannot be disposed of at the El Cabril facility.

5.2. Measures adopted for the safety review of existing facilities

Examination of the safety of the nuclear power plant pools is included in the on-going nuclear plant safety review programmes, designed to maintain the level of safety required by the authorisations and improve it in accordance with technological progress and new regulatory requirements. Specifically, analysis of operating experience is undertaken through the Periodic Safety Review carried out for each facility every ten years.

In addition, specific review programmes have been performed on the pools themselves, during different periods, with particular objectives relating to generic or specific aspects or to their operational situation, as explained in the first Joint Convention report.

General inspection programmes have also been carried out on all the pools, these having served as a basis for the preparation of directives on the content of the Radioactive Waste and Spent Fuel Management Plans (PLAGERR's) required as obligatory documentation by the RNRF for the operation of nuclear facilities.

The most recent measures, applied during the last few years, include measures relating to inspections and the development of CSN guides and instructions, all of them oriented towards improving control of the status of the fuel and core internals stored and implementation of the PLAGERR's, the most significant being the following:

1. The inspection series carried out at the storage facilities (wet and dry) existing at the operating plants, as part of the Basic Inspection Plan (BIP) of the Integrated nuclear power Plant Supervision System (IPSS). These have been performed systematically in accordance with the specific technical procedure PT-IV-227 "Inspection of spent fuel and high level radioactive waste management activities".
2. Publication of CSN Safety Guide GSG-9.03 on "Content and criteria for the drawing up of radioactive waste and spent fuel management plans", the objectives of which are, among others, aspects such as consideration of the interdependences between the different stages of management, minimisation of radioactive waste production and the responsibility of the producers, the aim being to optimise management and gain insight into the history and evolution of chemical and radiological characteristics and future characterisation needs.
3. Progressive review of the PLAGGER's and their implementation under the supervision of the CSN, based to a large extent on the results and experiences of previous activities.

As a result of these activities, and with a view to their better implementation, the Electricity Industry (UNESA) and ENRESA are carrying out two Coordinated Research Programmes (CRP's) on supporting studies for implementation of the aforementioned CSN Safety Guide and the feasibility of establishing a homogeneous common database.

5.3. Assessment of compliance

From what has been set out above, it may be deduced that the existing facilities for the temporary storage of spent fuel possess the characteristics required to ensure safe operation and that measures have been taken to comply with the general safety requirements arising as a result of ratification of the Joint Convention and applicable to such facilities, the aim being to improve their operation.

ARTICLE 6
SITING OF PROJECTED FACILITIES

Article 6. Siting of proposed facilities

1. *Each Contracting Party shall take the appropriate steps to ensure that procedures are established and implemented for a proposed spent fuel management facility:*
   - *(i) to evaluate all relevant site-related factors likely to affect the safety of such a facility during its operating lifetime;*
   - *(ii) to evaluate the likely safety impact of such a facility on individuals, society and the environment;*
   - *(iii) to make information on the safety of such a facility available to members of the public;*
   - *(iv) to consult Contracting Parties in the vicinity of such a facility, insofar as they are likely to be affected by that facility, and provide them, upon their request, with general data relating to the facility to enable them to evaluate the likely safety impact of the facility upon their territory.*
2. *In so doing, each Contracting Party shall take the appropriate steps to ensure that such facilities shall not have unacceptable effects on other Contracting Parties by being sited in accordance with the general safety requirements of Article 4.*

The 6th General Radioactive Waste Plan (GRWP) currently in force contains the basic Spanish strategy for the management of spent fuel. The Plan contemplates the temporary storage of spent fuel and high level waste based on a dry system guaranteeing the safety and protection of persons and the environment over the periods of time required to undertake definitive or very long-term management.

The facilities planned for spent fuel management shall be used for the temporary storage of such fuel, this being accomplished in a centralised or individualised manner. In general, the siting aspects to be considered will depend on whether a new site or an existing nuclear power plant site is used and, in this latter case, on whether the facility is constructed during the operation of the plant, as is the case of the Individual Temporary Storage (ITS) facility at the Trillo plant, or following definitive plant shutdown, as is the case of the future ITS facility at the José Cabrera plant.

6.1. FORECASTS REGARDING NEW SPENT FUEL MANAGEMENT FACILITIES

The solution proposed for the management of spent fuel, HLW and other radioactive wastes that, in view of the technical, strategic and economic analyses performed, cannot be disposed of at the solid radioactive waste disposal facility in Sierra Albarrana (El Cabril) is based on the availability of a vault type Centralised Temporary Storage (CTS) facility by around 2012, the operating period of which would be some 60 years.

The CTS-based strategy was proposed to the Government by a unanimous resolution of the Congressional Commission for Industry, made up of representatives of all the parliamentary groups, in December 2004. Likewise, during its session of April 27th 2006, this Commission for Industry approved a Bill relating to the setting up of an Interministerial Commission to establish

the criteria to be fulfilled by the site of the CTS facility for nuclear fuel and high level wastes and by its associated technology centre.

In response to the aforementioned bill, Royal Decree 775/2006, of June 23rd, created the Interministerial Commission in question, which will be made up of representatives of the Ministry of Industry, Tourism and Trade, the Ministry of the Environment, the Ministry of Economy and the Exchequer, the Ministry of Education and Science, the Ministry of Public Health and Consumption, the Ministry of Public Administrations and the Office of the President of the Government.

The Interministerial Commission shall be responsible for the following functions:

a) Establishing the technical, environmental and socio-economic conditions to be fulfilled by potential candidate sites for the CTS facility.

b) Establishing and driving the processes of public information and participation.

c) Developing the procedure by which interested municipal areas may opt to be candidates for the site.

d) Drawing up, for submittal to the Government, of a list of proposed candidate sites selected from among the interested municipal areas, on the basis of technical assessments of their suitability and taking into account the proposals made by the affected autonomous communities, where appropriate.

Since it was set up this Commission has prepared the technical and legal reports required to undertake the site selection process, informing the public as a phase prior to the launching of a public call for the municipal areas interested in hosting the facility and its associated technology centre to present their candidatures.

In the case of the CTS facility, a site will be selected from among the municipal areas presenting candidatures for the facility and its associated technology centre.

The Centralised Temporary Storage facility proposed would be of the vault type and would be modular in nature, equipped with a hot cell for the reception and conditioning of the spent fuel and other wastes, this allowing it to serve the dual purpose of a storage facility and a technology and research centre in the field of radioactive waste management (Figure 6).

Furthermore, it is necessary to initiate activities in the short term to ensure the availability of a facility (ITS) for the dry temporary storage of the irradiated fuel from the José Cabrera nuclear power plant, in order to be able to address the future dismantling of the plant as from 2009. On December 15th 2006 the Directorate General for Energy Policy and Mines authorised the construction of the ITS facility on the plant site. It will be a surface installation for the temporary storage of irradiated fuel under dry conditions. Likewise, on August 8th 2006 dry storage in the HI-STORM cask (Holtec International Storage and Transfer Operation Reinforced Module) was authorised (Figure 7).

6.2 Measures for the assessment of all safety-significant factors relating to the site

Aspects relating to the assessment of sites for nuclear facilities are taken into account throughout all the phases of licensing (i.e., preliminary authorisation and permits for construction, operation, modification and decommissioning). The RNRF specifies the documentation to be submitted by the licensee for each of the authorisations contemplated, as well as its scope regarding safety-significant aspects.

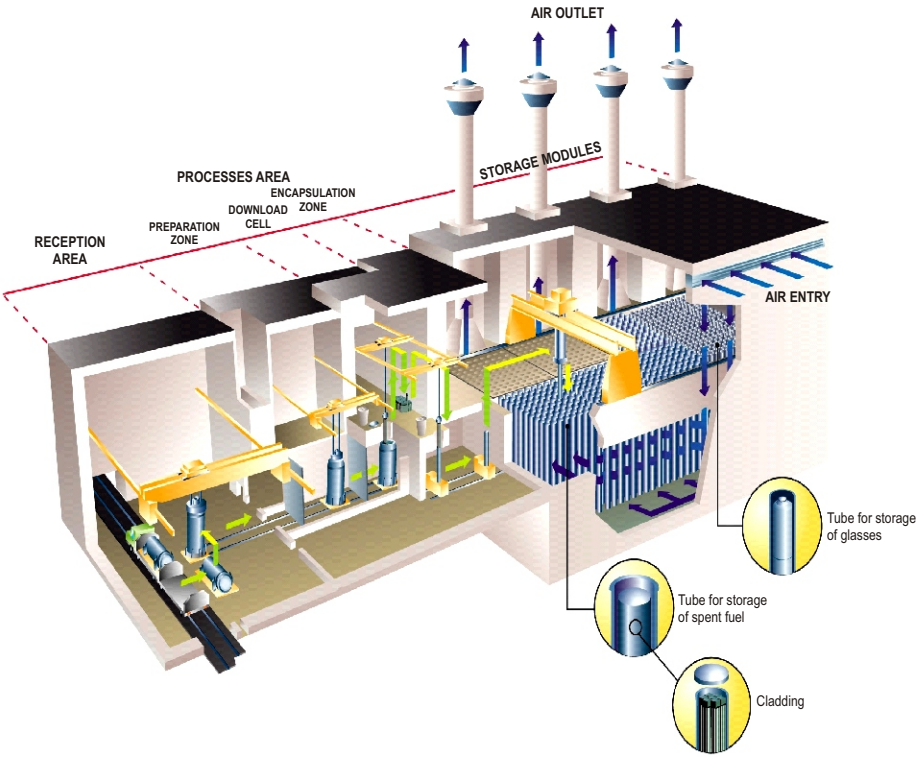

Figure 6. Design of the centralised temporary storage facility.

Summarised below is the documentation on the site to be submitted along with the application for the different authorisations.

- ✓ The application for the *preliminary authorisation* shall be accompanied by a characterisation study of the site and the area of influence of the facility, including sufficient data on those parameters of the site that might impact nuclear safety or radiological protection, including demographic and ecological data and activities relating to land development.
- ✓ The application for the *construction permit* shall be accompanied by a Preliminary Safety Analysis, including a description of the site and surrounding area and updated data on parameters impacting nuclear safety and radiological protection, including demographic and ecological data, data on land and water use and whatever other data might contribute to a better understanding of the site and of the plans for the tracking and verification of basic parameters representative of the site.
- ✓ The application for the *operating permit* shall be accompanied by a Safety Study containing, among other items of information, the complementary data on the site and its characteristics obtained during construction.
- ✓ In the *authorisation for modification* of facilities, aspects relating to the site are relevant when the modifications proposed have an influence on any factor relating to land use or the site conditions initially foreseen.

- ✓ Finally, the documentation on the site to be submitted with the *dismantling permit* shall relate directly to the radiological status of the site and of its area of influence.

In keeping with the above and with the types of temporary spent fuel storage facilities existing and foreseen in Spain, as described above, the following may be deduced:

- ✓ For temporary storage facilities based on the use of casks and located on nuclear power plant sites, the siting of which was subject in its day to the licensing process described above, the documentation submitted has been in accordance with the provisions of the RNRF in relation to plant modification authorisations and with the requirements of the preliminary cask approval process (a process similar to that contemplated in US CFR 72 for similar cases). The conditions of use established in cask approvals establish the conditions to be fulfilled by the site.

- ✓ In the case of the centralised temporary storage facility projected, the licensing will adhere to the process specified for nuclear facilities and the documentation relating to the site to be submitted for the corresponding authorisations shall fulfil the requirements specified above and those specified by the CSN in the limits and conditions contained in its favourable report on the generic design, issued on June 28th 2006, on the basis of the requirements of article 81 of the RNRF on the approval of designs and methodologies.

The assessment standards and criteria for licensing processes are established by the CSN in what are known as assessment guidelines for each facility, normally using those established by the IAEA and those of the country of origin of the technology, as well as whatever others are considered to be most complete, as indicated in Article 8 on facility safety assessment.

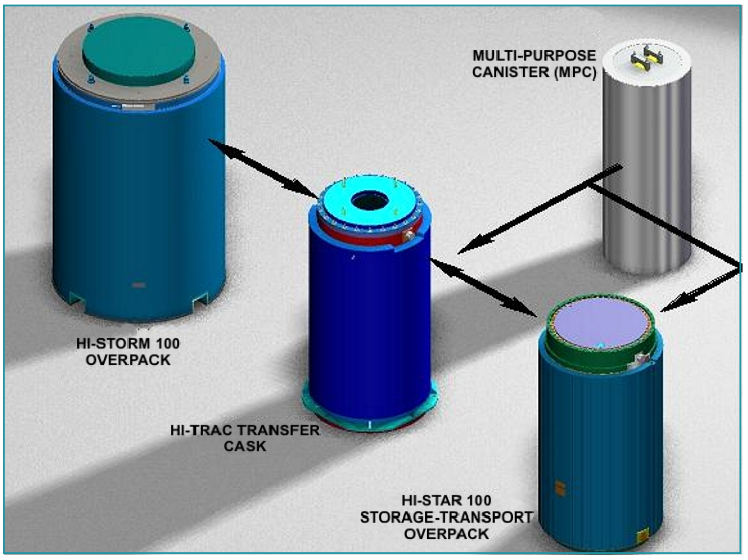

Figure 7. HI-STORM cask.

During the licensing process the CSN may condition its approval to compliance with certain conditions by the licensee.

The assessment activities are complemented by other CSN inspection or auditing activities during licensing, the aim being to check different aspects of the information included in the documentation submitted by the licensee of the facility.

Nuclear facilities carry out Surveillance Programmes on the basic parameters of the site and seismic and hydrogeological surveillance programmes that allow for continuous monitoring of their performance. These programmes are dynamic and adapted specifically to each site and facility and their results are documented and sent in periodic reports to the CSN for evaluation. This dynamic approach, along with the Periodic Safety Review, allows these programmes to be updated in accordance with experience and the evolution of the standards.

6.3 Criteria for the assessment of radiological repercussions on the environment and surrounding population

- ✓ In relation to the temporary storage facilities located on the sites of nuclear power plants, based on the use of casks, consideration has been given in the assessment to the characteristics of the site and to the interfaces existing between the storage system, the casks and the storage facility itself. In this respect, consideration has been given to the following aspects, among others:
  - ➪ Seismic and geotechnical aspects, using as a basis the spectrum of regulatory guide 1.60 ("Design Response Spectra Seismic Design of Nuclear Power Plants"), such that the foundation slab of the storage facility be capable of withstanding an earthquake of 0.25 g peak acceleration. The results demonstrate compatibility with the criteria applicable to the casks and included in 10 CFR 72 (Geological and Seismological Characteristics for Application for Dry Casks Modes of Storage").
  - ➪ Events representative of the altered and abnormal conditions that might occur throughout the lifetime of the facility, along with the radiological consequences of events having a very low probability of occurrence. In the case of the José Cabrera facility a request was issued for the updating of the aircraft impact study.
  - ➪ Radiological protection aspects including measurement of the dose rate at the boundary of the controlled zone, the surveillance zone and the controlled area. The environmental radiological surveillance programme has been extended where considered necessary.
- ✓ As regards the centralised temporary storage (CTS) facility for spent fuel, and as has been pointed out above, ENRESA has developed and submitted to the CSN for its favourable appreciation a generic conceptual design of the installation, pending the availability of a site. This has been undertaken in accordance with the current article 82 of the RNRF, which contemplates approval by the CSN of new designs, methodologies, simulation models or verification protocols relating to the nuclear safety or radiological protection of the installations or activities referred to in the RNRF.

The ENRESA application, accompanied by a CTS Generic Design Safety Analysis, was submitted to the CSN for evaluation. Given that the generic conceptual design of the CTS facility was not associated with any specific site, the design basis relating to the site and to natural phenom-

ena and the values of certain environmental parameters have been considered envelopes representative of the characteristics of the potential sites.

The favourable report on the generic design of the facility issued by the CSN on June 28th 2006 established the limits and conditions for future licensing phases, such that the study of the site finally selected to house the CTS facility will necessarily determine the following:

a) External natural phenomena and those induced by mankind for their inclusion in the detailed design basis, taking into account the classification given in standard ANSI/ANS 57.9-1992 "Design criteria for an independent spent fuel storage installation (dry type)". The detailed design will consider an annual average cut-off frequency of one event every million years (10^{-6}/year) as the threshold for design basis events. The detailed design of the CTS facility should determine the severance probability associated with each event, such as aircraft impact accidents, off-site flooding, tornados and hurricanes and risks of human origin in the vicinity of the facility, for them to be considered as accidents belonging to the "beyond design basis" category.

b) Current and future local uses of land and water and the population (most exposed individual and general public) that might be affected by the installation; and

c) The processes of mobilisation and transport of contaminants to the critical individual and the public, including the dispersion and dilution parameters necessary to determine the radiological impact of the facility under both normal operating and accident conditions".

In general, the characteristics of the CTS facility site, along with the design parameters of the facility, make up the set of factors to be taken into account in the Safety Analysis and Environmental Impact Assessment of the facility, which are to be taken into account by the competent authorities during the licensing process for the different permits for the installation.

In keeping with the conditions established in the favourable report by the CSN for the generic design of the CTS facility, the criteria to be met by a site include all those factors that relate to the operating statuses of the facility, along with the potential accident conditions.

Also included are those that might give rise to the need for emergency measures to be adopted, along with all those natural and man-made events that might be of importance for the safety of the facility. As a result, the factors to be evaluated may be divided into three major blocks:

- ✓ External events of natural or man-made origin, with a frequency and intensity in the region of the site sufficient to eventually affect the safety of the facility.
- ✓ Characteristics of the site that might influence the potential transfer of radioactive material to the environment and persons.
- ✓ Data relating to population density and distribution, along with other characteristics that might affect the implementation of emergency measures and the need to assess risks for individuals and for the population.

In view of this preliminary classification, and for a facility of the CTS type, it would appear to be clear that these factors, and in particular those belonging to the first block (impacts that might arise as a result of external events) may serve for the a priori assessment of candidate sites for the CTS facility, taking the following as reference criteria:

- ✓ Sites with potential risk due to earthquakes, active faults, recent volcanic activity, etc.
- ✓ Sites implying the potential occurrence of extreme meteorological events (tornados, hurricanes, etc.).
- ✓ Sites subjected to the risk of major floods as a result of extreme rainfall, areas that might be affected by the occasional breaking of a dam, abnormally intense thawing, etc.

- ✓ Sites with geotechnical instabilities or in areas that might be affected indirectly by them (landslides, embankments, collapses, subsidence, etc.).
- ✓ Sites with an appreciable risk due to possible catastrophic accidents induced by mankind (caused by proximity to airports, stations and important transport hubs, and in general industrial or technological areas that might entail any risk of chemical explosion or strong discharges of energy).

In addition, consideration should be given to the exclusion of areas protected because of their heritage, both natural protected areas and those of cultural and historic value.

Finally, a series of criteria relating to the socio-economic feasibility of the facility may be mentioned, referring to the characteristics of the area demonstrating the availability of spaces, accessibility and the existence of the necessary infrastructures suitable for the construction and subsequent operation of the facility.

This set of criteria constitutes a qualitative basis from which to assess the exclusion of those sites that present any of the aforementioned characteristics. It should also be pointed out that as regards the external phenomena considered, any assessment that might be carried out at the present time is purely referential, since the exclusion of a site on the basis of external phenomena should be evaluated through the corresponding risk analysis specific to the duly characterised site.

6.4 Public information on the process of site selection and construction of facilities

One of the most significant events that have taken place among the communication activities of the Spanish nuclear sector has been the celebration in 2006 of the Panel for Dialogue on Nuclear Energy, called by the Government and held within the framework of the Ministry of Industry, Tourism and Trade. This Panel for Dialogue has been made up of members of the different parliamentary groups, representatives of the central and regional governments, NGO's, trade unions, the business community and the academic world, with representatives also of the OECD. The Panel has met on seven occasions between November 2005 and May 2006, its sessions consisting of papers, debate and conclusions regarding the most significant aspects of nuclear safety. Radioactive wastes, the safety of waste management facilities and possible management strategies have occupied an important place among the issues dealt with. All the documentation relating to the Panel for Dialogue has been published on the internet[1].

On completion of the sessions, the MITYC drew up a document on conclusions and proposals that was submitted to the Government with a view to the Debate on the State of the Nation. As regards the management of high level wastes, and more specifically the CTS facility, it was stated that this option was considered "by the majority" to be the most adequate for this type of wastes, although site selection, which should not be "further delayed", "should be based on wide political, institutional and social consensus at both national and local level".

On conclusion of the Panel for Dialogue, an Interministerial Commission was set up by Royal Decree 775/2006, of June 23rd[2], to establish the criteria to be fulfilled by the CTS facility and its associated technology Centre, in keeping with the strategy contemplated in the 6th GRWP. As pointed out in section 6.1, the constitution of this Interministerial Commission was requested by way of a Bill by the Congressional Commission for Industry. Among the tasks of this Interministerial Com-

[1] *http://www.mityc.es/Energia/Secciones/Mesadialogo/*

[2] *Royal Decree 775/2006, of June 23rd, creating the Interministerial Commission for the establishment of criteria to be met by the site of the centralised temporary storage facility for spent nuclear fuel and high level wastes and associated technology centre; Official State Gazette number 159 of July 5th 2006.*

mission, which will be supported by a Technical Advisory Committee set up for this purpose, will be the definition of the basic criteria to be met by a site in order to be able to host the CTS facility and associated Technology Centre, the supply of the necessary information to all the municipal corporations and entities that might be interested in knowing the project in greater detail and the launching of a public call to which those municipal areas that wish to be candidates for the site might voluntarily respond.

At the end of July 2006 a public announcement was published in the press with information on the constitution of the Commission and with details of the project, indicating how to obtain complementary information and including answers to frequently asked questions.

The next phase of the process is the drawing up of criteria for site selection, along with the set of conditions for the public invitation to bid, which must be published in the Official State Gazette. As from the moment of such publication a period for the reception of applications and prioritisation of interested parties is foreseen, which will finish with the submittal to the Government of the prioritised applications, taking into account the proposals of the Autonomous Communities. Finally, the site will be designated by the Government.

This mechanism for designation of the site to host the CTS facility is a democratic process, the philosophy of which has been advocated in development of the COWAM generic designation projects, funded by the European Commission. These emphasise the need for the voluntary participation of the local communities and for their involvement in decisions affecting them significantly, as is the case of an installation for the temporary storage or disposal of radioactive wastes.

It is important underline the fact that once a candidate municipality has been selected to host the facility, the designation of the site does not differ from the licensing processes indicated in the RNRF for other nuclear facilities. In other words, a favourable report by the CSN will be mandatory, followed by an environmental impact assessment with its corresponding phase of public information, etc. (refer to the process described in Annex B). The CTS facility does not require any relevant characteristics different from those of any other industrial installation, apart from a suitable geographical location and adequate geological characteristics.

6.5. Public information on safety

Since the previous publication of this report in 2005, some of the most important standards that regulate the licensing and control of nuclear and radioactive facilities in Spain have varied, in particular the Law creating the CSN, reformed by Law 33/2007, and the Regulation on Nuclear and Radioactive Facilities, modified in Royal Decree 35/2008. Likewise, the legislation on environmental impact has been unified in Legislative Royal Decree 1/2008, the rewording of the Law on the Assessment of Environmental Impact.

The new wording of the Law Creating the CSN establishes transparency as one of the basic objectives of the reform, interpreting this concept as a mandate to inform the public, social organisations and political representatives of both the safety of the installations and the operation of the regulatory system. In this respect it establishes the obligations set out below:

a) The CSN shall keep the national Government and Parliament and the Governments and Parliaments of the Autonomous Communities concerned informed of any event or circumstance that affects the safety of the facilities or the radiological quality of the environment.

b) The Council shall also submit an annual report on its activities to the Congress, the Senate and the Parliaments of Autonomous Communities having nuclear facilities in their territory.

c) The CSN shall habitually and on its own initiative provide the public with information on the following:

- Relevant facts relating to the safety of nuclear and radioactive facilities, the radiological impact for persons and the environment and events and incidents that have occurred, as well as the corrective measures implemented to prevent the repetition of such events.
- The agreements reached by the Council, with a clear explanation of the issues dealt with, the reasoning underlying the agreement and the results of the voting.

d) The CSN shall promote information forums in areas surrounding nuclear facilities, providing information on their operation and, especially, on preparations for emergency situations and the analysis of events that have occurred.

e) It shall also submit technical instructions and guidelines for public comment during their phase of preparation.

These obligations are complemented with a legal caution, inasmuch as access by the members of the public to information on all aspects making up the realm of competence of the CSN is expressly subject to Law 27/2006, which regulates rights of access to information, public participation and access to justice in relation to environmental matters. This law constitutes a transposition to the Spanish legal system of European Union and Aarhus Convention directives 2003/4/CE and 2003/35/CE.

Furthermore, the aforementioned Law 33/2007 creates a CSN Advisory Committee on public information and participation, the mission of which is to issue recommendations and evaluate the performance of the informative function. The composition of the Committee represents a wide diversity of interests and opinions and ranges from institutional and regional representatives to business, professional, trade union and environmental entities.

The CSN meets its obligations to provide information to society in four ways:

- ✓ Through the issuing to designated addressees of reports, informative notes and press releases, for which it maintains the corresponding distribution lists.
- ✓ Replying to all queries and requests for information received, by either normal post or electronic mail, for which it maintains a mailbox open on its institutional website.
- ✓ Including all the information generated to cover the requirements set out above on its institutional website, which also serves as a support for information on the internal activity of the organisation. Particularly significant in this respect is the publication of all reports on inspections performed.
- ✓ Publishing a collection of one-off and periodic documents, free of charge, covering numerous issues relating to nuclear safety and protection against radiations, from various points of view. The publications range from technical reports (for example R&D documents) to informative publications with contents, scope and language style adapted to non-technical audiences.

The new Regulation on Nuclear and Radioactive Facilities also touches on the issue of public information through the provision renewing the Local Information Committee. The function of this Committee, also included in the previous version of the Regulation, is to provide information to the local authorities in areas surrounding nuclear power plants during the phases of construction, operation and dismantling, and is made up of representatives of the licensee of the facility, the CSN and central and autonomous community government departments responsible for industry, civil defence, public security and emergencies. The local representatives on the

committee are the mayor of the municipality in which the plant is located and the mayors of all municipalities included within a radius of 10 Km around the plant, as contemplated in the emergency plans.

The aforementioned environmental standard (R.D.L.1/2008) maintains and reinforces what was indicated in the previous report regarding access to information and public participation in all projects requiring an Environmental Impact Assessment. As regards the latter, the following are expressly mentioned:

1. Nuclear power plants and other nuclear reactors, including the dismantling or definitive decommissioning of such plants and reactors.
2. Irradiated nuclear fuel reprocessing facilities.
3. Facilities designed for any of the following purposes:
   - The production or enrichment of nuclear fuel.
   - The management of spent nuclear fuel or high level waste.
   - The definitive disposal of spent nuclear fuel.
   - Exclusively the definitive disposal of radioactive wastes.
   - Exclusively the storage (projected for a period of more than ten years) of spent nuclear fuels or radioactive wastes at a location different from that in which they were produced.

6.6. International arrangements

Pursuant to article 37 of the Treaty constituting the European Atomic Energy Community (EURATOM), of which Spain has been a member since 1986, it is necessary to provide the European Commission with general data on all radioactive waste disposal projects (regardless of form) making it possible to determine whether the performance of such project might give rise to the radioactive contamination of the waters, soil or air space of another Member State.

Article 7
Design and construction of facilities

Article 7: Design and construction of facilities

Each Contracting Party shall take the appropriate steps to ensure that:

(i) the design and construction of a spent fuel management facility provide for suitable measures to limit possible radiological impacts on individuals, society and the environment, including those from discharges or uncontrolled releases;

(ii) at the design stage, conceptual plans and, as necessary, technical provisions for the decommissioning of a spent fuel management facility are taken into account;

(iii) the technologies incorporated in the design and construction of a spent fuel management facility are supported by experience, testing or analysis.

7.1 Measures for the granting of authorisations

The licensing process, regulated by the regulation on nuclear and radioactive facilities (RNRF), is described in Annex B of this report. Of relevance in relation to this article are the provisions governing construction permits and the performance of modifications, as well as the provision under which the CSN may issue a favourable report on new designs (Article 82 of the RNRF), as a result of the impact they may have in facilitating the subsequent process of licensing of the facility.

In accordance with the RNRF, the application for the construction permit must be accompanied by the Preliminary Safety Analysis (PSA), as well as by other documents. In addition to the description of the site in the terms established above, this PSA should contain the following items, among others:

- ✓ Description of the facility, including the criteria adhered to in the design of the safety-related components or systems on which the installation depends.
- ✓ Analysis of foreseeable accidents and their consequences.
- ✓ Radiological analytical study with an estimate of potential environmental impact.
- ✓ Environmental surveillance programme, using the conclusions of the aforementioned study as a basis, and
- ✓ Construction quality assurance programme.

Additionally, a pre-nuclear testing programme should be submitted during construction, establishing the tests, verifications and checks to be performed on the different systems of the facility.

Likewise, applications for facility design or operating condition **modification permits**, which imply the authorisation of assembly and testing, should be accompanied fundamentally by the following documentation: a technical description of the modification, the basic design of the modification, the safety analysis performed, the standard to be applied to the design, construction, assembly and testing and identification of the plant documents that will be affected by the modification, including the proposed text.

These studies, along with the rest of the documentation submitted, are evaluated in detail by the CSN, which draws up a report and a proposal, this being sent to the MITYC prior to the authorisation and governing the activities of the licensee during the construction process.

In relation to what has been set out above, and by way of an example, certain of the conditions directly relating to the content of point i) of this Article, resulting from the evaluation by the CSN of the Safety Analysis submitted by ENRESA with the application for the favourable appreciation of the generic design of the centralised temporary storage (CTS) facility are described below.

"The detailed design of the CTS facility shall:

- ✓ Identify the definitive list of structures, systems and components (SSC's) classified as being of importance from the point of view of safety and incorporate the corresponding lifetime management programme and the analysis or study that examines the degradation phenomena to which the said SSC's will be subjected throughout the lifetime of the facility.
- ✓ Contemplate the detailed inventory of the spent fuel and high and intermediate level wastes to be stored at the facility, along with a description of their characteristics.
- ✓ Incorporate the corresponding analyses for the validation and verification of the calculation codes. The versions of the software, including the corresponding libraries, shall correspond to updated versions.

- ✓ Take into account the radiological criterion of operational dose restriction, establishing a fraction of one tenth of the limit established in the regulation on radiological protection against ionising radiations, approved by Royal Decree 783/2001, of July 6th, i.e. a value of 0.1 mSv/year, as the maximum limit for potential radiological impact on the public due to the release of liquid or gaseous effluents.
- ✓ The detailed design of the ventilation systems of the CTS facility shall identify the standards deriving from the application of 10CFR72 and ANSI/ANS 57.9-1992. Any possible deviations from this criterion shall be justified by means of the corresponding detailed comparative analysis.
- ✓ The detailed design of the systems for the treatment of the liquid effluents and solid wastes generated as a result of operation of the CTS facility shall be in accordance with the specific standards indicated in NUREG-1567 and NUREG-0800.
- ✓ Royal Decree 158/1999 on the security of nuclear materials establishes the standard explicitly applicable to the security of the materials. The design of the protection and security of the facility shall be in accordance with the criteria approved by the CSN for this type of installations, which shall be appropriately communicated in due time.

These requirements should be taken into account, in accordance with the provisions of the RNRF for subsequent licensing phases. These conditions are completed by way of others relating to the applicable standards, the site requirements described in section 6.2 of this report, etc.

7.2. Technologies used for spent fuel storage

The technology most widely used in Spain for the storage of spent fuel is the pool. Experience of this type of systems at world level amounts to more than 50 years and many nuclear facilities have used it over this period. As long as there are no adverse water chemistry conditions, there would appear to be no limit as regards the time that fuel from light water reactors and with zircaloy and zirlo cladding may be kept using this storage mode.

The Trillo and José Cabrera nuclear power plants also use dry storage technologies for their fuel. In these cases storage is accomplished mainly in casks having an additional coating of metal, concrete or some other material providing the overall assembly with shielding properties and structural support against external demands. Some of these casks are used for both the storage (outdoors or in a building) and transport of spent fuel.

The technology used at Trillo nuclear power plant is based on the use of dual purpose metallic casks (storage and transport). Their multiple wall design (stainless steel – lead – stainless steel – neutron shielding – stainless steel) guarantees the confinement of the system, monitoring the maintenance of pressure in the space between the two main layers of the cask.

The technology selected in the case of the José Cabrera nuclear power plant is based on the use of welded metallic capsules inserted in metal-concrete or totally metallic modules for the storage and transport functions, respectively. These containers are stored temporarily at the plant itself in an outdoor facility especially constructed for this purpose.

The dry storage system for spent fuel used at this nuclear power plant is made up of a set of three components: the multi-purpose capsule (MPC), the concrete and metal storage module or container, known commercially as the HI-STORM 100 Z, and a transfer canister known as the HI-STAR for transfer of the capsule from the pool to the storage facility. This system was approved by the MITYC in August 2006, following a favourable report from the CSN. The system

also includes an additional container for off-site transport of the capsule, known as HI-TRAC, which was approved as a B(U) type waste package in December 2007

The official strategy for the temporary management of spent fuel consists of constructing a facility in which the storage of the spent fuel would be centralised along with that of other high activity wastes (CTS). It is foreseen that the future centralised storage facility will also use the dry storage option. At present a process is under way for the selection of a site for the CTS facility, in which the criteria of public participation are being applied through an open, voluntary and transparent process. There is a generic design for this facility, based on a vault type dry storage technology with cooling by natural convection of air. The design capacity is for 6,700 tU in fuel assemblies plus the vitrified high level wastes from the reprocessing of the fuel from Vandellós I and other wastes not open to disposal at El Cabril. The CTS facility will be an integral structure that will also incorporate the following:

- ✓ Spent fuel reception area or building.
- ✓ Process building for insertion of the fuel into the storage capsules.
- ✓ Auxiliary services and systems building
- ✓ Irradiated fuel capsule storage modules, each with two vaults with independent air inlets and outlets.
- ✓ High level waste package storage shed.

Wide international experience is available in relation to the vault technology selected for the CTS facility, with design either only for the storage of spent fuel, only for high level vitrified wastes or in combined solutions. In all cases the safety requirements have been adequately fulfilled.

7.3. Assessment of compliance

From what has been set out above it may be deduced that Spain has adopted the measures necessary to fulfil the requirements contemplated in this article of the Convention, since the Spanish legislation includes a formal procedure for the granting of construction and modification permits for nuclear facilities that contemplates design review, the surveillance of construction and verification of the suitability of performance via a programme of prenuclear tests. Furthermore, the technologies used in the new temporary fuel storage facilities are backed by reliable previous experience.

Article 8
Facility safety assessment

Article 8. Assessment of safety of facilities

Each Contracting Party shall take the appropriate steps to ensure that:

(i) before construction of a spent fuel management facility, a systematic safety assessment and an environmental assessment appropriate to the hazard presented by the facility and covering its operating lifetime shall be carried out;

(ii) before the operation of a spent fuel management facility, updated and detailed versions of the safety assessment and of the environmental assessment shall be prepared when deemed necessary to complement the assessments referred to in paragraph (i).

8.1. Legal and regulatory requirements

As has been pointed out above, the construction and operation of temporary storage facilities for spent fuel are subject to the system of licensing of nuclear facilities described in Section E and Annex B of this report. Applications for these permits by the licensees are to be accompanied by the corresponding Safety Analyses, with the content specified in the RNRF for each authorisation (construction, operation or modification of the installation).

Furthermore, Article 80 of the RNRF establishes that manufacturing of the spent fuel storage casks will require approval of their design, following a mandatory report from the CSN. Although this legislation does not specify the content of the documentation to be submitted for approval of the design and use of these casks, the case of the ENSA-DPT cask in use at Trillo nuclear power plant and approved in 2002 in fact constitutes a precedent, and this experience has served for the approval of the design and use of the spent fuel storage cask for the José Cabrera nuclear power plant. The process has thus been consolidated, including the content of the safety analysis and the safety requirements to be applied, which have been incorporated in a CSN Safety Instruction. As has been indicated above, these instructions have legal standing and compliance with them is obligatory.

Finally, as regards favourable appreciation by the CSN of the generic design of the foreseen centralised temporary storage facility, it is indicated that this is based on Article 82 of the modified version of the RNRF and is also included as a function of the CSN in the modification of the Law by which the organisation was created, which contemplates the issuing of a favourable report by the CSN for new designs or generic methodologies relating to the safety or radiological protection of installations and activities referred to in the RNRF. For this purpose applications are required to be accompanied by the necessary documentation. This declaration may be referred to subsequently during the subsequent phases of the licensing process contemplated in the RNRF, as long as the limits and conditions imposed in the declaration have been adhered to.

Each of the Safety Analyses referred to above contains the analyses required to demonstrate compliance with the safety functions and design criteria of the facilities under normal and accident conditions, accompanied by a study of the consequences or radiological impact.

As regards environmental assessment, referred to in the heading of this article of the Convention, it is indicated that in accordance with the Spanish legislation governing this issue, the assessment of non-radiological environmental impact is associated with the preliminary or site permit, as pointed out in Section E, and has been carried out for the dry temporary storage facilities located on the sites of existing nuclear power plants.

In all cases, in accordance with the functions attributed to the CSN by the law by which it was set up and the provisions of the RNRF, the documentation submitted by the licensee, and specifically the safety analyses submitted for the construction and operating permits, is systematically evaluated by the CSN for the issuing of its mandatory and binding report prior to the granting of such authorisations by the MITYC.

8.2. Licensing process for existing facilities

The licensing of the pools associated with the design of the nuclear power plants is integrated into the licensing of the plants themselves and is subject to the process of plant periodic Safety Review. The operations for the replacement of the initial storage racks with other more compact units, in order to increase storage capacity, carried out at all the operating plants, and specifically the most recent such operation carried out in the East pool of the Cofrentes plant, have been performed as plant design modifications in accordance with articles 25 to 27 of the RNRF.

The licensing of the temporary storage facilities located on the sites of the Trillo and José Cabrera plants, based on the use of dry storage casks, has included the following:

- ✓ Firstly, the approval of the design of the storage cask or system in each case, in accordance with the provisions of article 80 of the RNRF.
- ✓ Licensing of the temporary storage facility itself, handled in both cases as a nuclear power plant design and operation modification, in accordance with the procedure established in article 25 and subsequent articles.

Additionally, when the cask itself or one of the components of the storage system fulfils transport functions (such as the ENSA-DPT dual-purpose cask for Trillo and the HI-STAR component for the transfer of the MPC capsule within the Jose Cabrera system, respectively), the aforementioned approvals and authorisations are accompanied by the corresponding approval of the cask or component as a B(U) type transport package model, in accordance with the applicable Spanish Transport Regulation, which takes the IAEA regulation as a reference.

In the case of the centralised temporary storage (CTS) facility foreseen, licensing shall adhere to the process described in Annex B of this report, and may refer also to the provisions of article 12 of the RNRF, according to which "the preliminary and construction permits may be applied for simultaneously" in the case of temporary storage facilities. In this case, and in view of the fact that the CSN has issued a favourable declaration regarding the generic design of the facility, this process would be facilitated, as established by the RNRF, as long as the conditions issued by the CSN along with its declaration are taken into account.

8.3. General framework of safety analyses and assessments

In general, the framework for the safety analyses and assessments of storage facilities is based on the standards of the IAEA and on the standards of the country of origin of the technology.

- ✓ In the case of storage facilities associated with reactors, the Safety Analyses submitted by the licensees contain several sections referring to the spent fuel storage installation. In the assessment, section 9.1.2 "Spent Fuel Storage" of NUREG-0800 "Standard Review Plan" is used, along with the other applicable sections, while in the case of the nuclear power plant with German technology (Kraftwerk Union Aktiengesellschaft), the criteria of the standards of that country have been used, contrasted for evaluation with the aforementioned requirements.
- ✓ As regards the spent fuel dry storage casks, the safety analysis adheres to the format of NUREG-1536, the contents also complying with the applicable IAEA standard.

The safety analysis and the areas of assessment have included the following aspects: general description of the cask, main design criteria, structural assessment, thermal assessment, assessment of shielding and criticality analysis, as well as the operating procedures, acceptance criteria and maintenance procedures, protection against radiation, a chapter on accident analysis, another on quality assurance and another on operating limits and conditions.

In addition to identifying the licensee and the model of cask approved in each case, the limits and conditions issued by the CSN, which as has been pointed out above are part of the approval of the casks by the MITYC, specify the standards applicable to their design, manufacturing, testing and use, the period of validity of the licence, a description of the cask, the specifications of the spent fuel to be stored, requirements regarding the operating procedures, quality assurance, the movement of heavy loads, design changes, storage facility requirements, identification requirements, pre-operational testing and personnel training, information to be provided to the

CSN (prior to use and annual report), updating of the Final Safety Analysis and interface with the user of the cask.

For the spent fuel dry storage facilities located at the Trillo and Jose Cabrera nuclear power plants, based on the use of casks, the procedure and requirements of 10 CFR 72 (Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-related greater than Class C Waste) have been adhered to, specifically the article of 10 CFR 72. 212 applicable to nuclear power plants licensed in accordance with 10 CFR 50, since they are similar cases. The safety analysis has complied with Regulatory Guide 3.62 "Standard format and content for the Safety Report for Onsite Storage of Spent Fuel Storage Casks" and with the aforementioned USNRC NUREG.

In assessing the Safety Analysis, and in addition to the interface for use of the storage cask, in each case there has been an evaluation of the documentation of plants affected by the storage facility, such as the Quality Assurance Programme, the Shutdown Operating Technical Specifications, the Site Shutdown Emergency Plan, the Shutdown Radiological Protection Manual and the Spent Fuel and Radioactive Waste Management Plan.

- ✓ Finally, consideration has been given in the safety analysis submitted along with the request for the favourable appreciation of the generic design of the centralised temporary storage (CTS) facility foreseen, to the applicable requirements of the Joint Convention, of NUREG- 1567 (Standard Review Plan for Spent Fuel Dry Storage Facilities) and of the specific standards of the IAEA (especially those contained in Safety Series 116, 117 and 118, the contents of IAEA Guide 271 and the WENRA reference levels for fuel and waste temporary storage facilities, taken into account by IAEA Guide 316).

The assessment has included a comparative study of the international standards applicable to the design of a similar facility.

The areas assessed have included the following aspects: estimated inventory of spent fuel and wastes to be stored and form of conditioning, characteristics associated with the hypothetical site, design basis and design characteristics of the vault type installation, analysis of civil works, criticality and confinement analysis, heat removal systems, auxiliary systems (fire-fighting, electrical, instrumentation), safety requirements for the operating phase, radiological impact of normal operation and radiological consequences of design basis accidents, project quality assurance programme, security and criteria associated with dismantling of the plant.

The safety conditions issued by the CSN with its favourable report have been included in sections 6.2, relating to the site, and 7.1, on measures during the design and construction of the foreseen installations.

Finally, it is pointed out that in view of the in-house assessment experience and of the analysis of international standards, fundamentally IAEA standards and those of the WENRA Waste Group (specifically the reference levels for temporary storage), two Council Safety Instructions are currently being drawn up (for publication in the near future):

- ✓ CSN SI on safety requirements relating to spent fuel dry storage casks.
- ✓ CSN SI on spent fuel and high and intermediate level waste temporary storage facilities.

8.4. Assessment of compliance

The legal framework existing in Spain for the licensing of nuclear facilities requires safety assessment during the phases of construction and operation, as referred to in this article of the Joint

Convention, this having been systematically undertaken for the existing facilities, creating a basis for application to other facilities in the future. The existing legal framework also contemplates requirements for installations based on the use of dry storage casks and approval of the design and manufacturing of such casks. In addition, practice has consolidated the process of assessment and licensing of this type of facilities. As a result, Spain may be said to reasonably fulfil the requirements of this article.

ARTICLE 9
OPERATION OF FACILITIES

Art. 9 Operation of facilities

Each Contracting Party shall take the appropriate steps to ensure that:

(i) the licence to operate a spent fuel management facility is based upon appropriate assessments as specified in Article 8 and is conditional on the completion of a commissioning programme demonstrating that the facility, as constructed, is consistent with design and safety requirements;

(ii) operational limits and conditions derived from tests, operational experience and the assessments, as specified in Article 8, are defined and revised as necessary;

(iii) operation, maintenance, monitoring, inspection and testing of a spent fuel management facility are conducted in accordance with established procedures;

(iv) engineering and technical support in all safety-related fields are available throughout the operating lifetime of a spent fuel management facility;

(v) incidents significant to safety are reported in a timely manner by the holder of the licence to the regulatory body;

(vi) programmes to collect and analyse relevant operating experience are established and that the results are acted upon, where appropriate;

(vii) decommissioning plans for a spent fuel management facility are prepared and updated, as necessary, using information obtained during the operating lifetime of that facility, and are reviewed by the regulatory body.

9.1. OPERATING PERMIT: LIMITS AND CONDITIONS. OPERATING EXPERIENCE

The spent fuel storage pools (SFSP's) of all the nuclear power plants currently in operation have been evaluated and authorised as part of the licensing process of the plants themselves, as a result of which the design requirements and operating limits and conditions included in the safety and environmental assessments are part of the Operating Permits awarded to the licensees, on completion of the start-up programme (pre-nuclear and nuclear testing programme) that demonstrates that the facility, as built, fulfils the design and safety requirements.

In addition, the dual-purpose metallic cask storage facility is in operation at Trillo nuclear power plant, authorised as a design modification within the framework of the plant Operating Permit in force in accordance with the same licensing process as applied to the original permit.

Likewise, the storage facility of the José Cabrera plant will soon be fully operative and will house the spent fuel assemblies from this plant, which was definitively shut down in 2006, in order to allow plant dismantling operations to begin.

The Operating Permit in force allows the licensee to possess and store slightly enriched fuel assemblies, in accordance with the technical limits and conditions contained in the Refuelling Safety Report for each cycle and with the limits and conditions associated with the specific authorisations for the storage of fresh and irradiated fuel.

The procedures of the nuclear power plants contemplate the analysis of in-house and industry operating experience, this potentially leading to the performance of improvement actions in relation to both design aspects and operating procedures. Among the reports analysed are those generated by INPO/WANO, the US-NRC and suppliers.

Spent fuel operations are performed at the nuclear power plants in accordance with the OTS's and the Radioactive Waste Management Plan (PLAGERR), both of which are mandatory documents.

The OTS's establish the Operating Limit Conditions, their applicability, the necessary actions and the surveillance requirements necessary to comply with the limit conditions. They also contain the limit values for variables affecting safety, the actuation limits of automatic protection systems, the minimum conditions for operation, the programme for the periodic revision, calibration, inspection or testing of various systems and components and their operational control.

For the development and detailing of the OTS surveillance requirements, surveillance procedures are drawn up for performance by the different departments involved in plant operation.

9.2. Operating, maintenance, radiological surveillance, inspection and testing procedures

The nuclear power plants have procedures regulating the performance of different activities relating to the operation, maintenance, radiological surveillance and inspection of the structures, systems and equipment that form part of the spent fuel storage installations.

The facilities have detailed inventories of the fuel assemblies existing in the spent fuel pool, with the following information on each of the assemblies:

- ✓ Identification and technical characteristics (manufacturer, model and type).
- ✓ Burnup history and burnup value reached.
- ✓ Isotopic balance of the assembly
- ✓ Storage position
- ✓ Physical condition of the assembly, existence of fuel rod failures and inspections performed.
- ✓ Defective rods removed from fuel assemblies.

This information is updated at the end of each operating cycle and is in accordance with the corresponding OTS and the Annual Report of the PLAGERR.

The monthly operating report sent to the CSN contains information on the storage conditions of the spent fuel pools and casks and on possible variations with respect to the previous report, including a list of the existing assemblies, accumulated burnup and the data of unloading from the reactor.

9.3. Engineering and technical support services

The nuclear power plants have engineering and technical support services to facilitate compliance with and verification of safety criteria in spent fuel storage areas, within the scope described in the plant Operating Regulation.

The contracts established with the suppliers and/or manufacturers of nuclear fuel contemplate technical support regarding the fuel assemblies supplied, including transmission of the characteristics and design of the assemblies, the operating limits to guarantee the fuel and the drawings and data required by the nuclear power plant as a result of the contracts drawn up between it and the competent companies providing irradiated fuel services (ENRESA, transport of irradiated fuel, storage, etc.).

9.4. Reporting of events

The OTS's of the nuclear power plants establish the conditions under which special reports should be drawn up whenever there are incidents of significance for the safety of their spent fuel storage facilities.

Reportable Events are communicated to the CSN and to the competent governmental authorities using the formats of CSN Instruction IS-10. Special reports shall be sent to the CSN, as established in the OTS's.

In addition, the CSN is responsible for inspection and control of the operation of the nuclear power plants, and is empowered to carry out inspections in relation to nuclear safety and radiological protection.

9.5. Decommissioning

As established in the RNRF (Section E), the licensees of nuclear power plants draw up and update, where necessary, the decommissioning plans for their spent fuel management installations, using the information obtained during the operating lifetime of the facility. These plans are examined by the regulatory body.

9.6. Assessment of compliance

From what has been set out above it may be deduced that in Spain the operations performed at the existing spent fuel management facilities provide the characteristics necessary to ensure compliance with the different measures required by the Convention in this article.

Article 10
Spent fuel disposal

Article 10. Disposal of spent fuel

If, pursuant to its own legislative and regulatory framework, a Contracting Party has designated spent fuel for disposal, the disposal of such spent fuel shall be in accordance with the obligations of Chapter 3 relating to the disposal of radioactive waste.

As has been pointed out in Section B of this report, the current 6th GRWP contemplates limited temporary storage (periods of between 50 and 100 years) followed by a definitive disposal installation as being the basic option for the long-term management of spent fuel.

As regards final management, the activities to be carried out in the coming years will focus on the following courses of action:

- ✓ The knowledge acquired of techniques and methods for the characterisation from the surface of granitic and clay geological formations capable of housing a definitive disposal installation will be compiled and summary documents will be drawn up with the information acquired to date. Site search activities are not expected to be restarted.
- ✓ The generic designs for each host rock will be consolidated and alternatives to them will be contemplated as a result of improved understanding of components and processes and considering the criterion of recovery, over a defined period of time, of the wastes disposed of.
- ✓ The corresponding safety assessment exercises will be reviewed, with a view to updating them in accordance with the progress made in R&D programmes and in keeping with the revised designs.

For the purposes of economic calculation and planning, the GRWP establishes a schedule that contemplates the start-up of a definitive disposal facility in the year 2050. Decision-making and site characterisation would cover the period 2025 to 2040 and construction of the installations would run from 2041 to 2050.

Section H

Safety in the management of radioactive waste

Section H. Safety in the management of radioactive waste

Article 11
General safety requirements

Article 11. General safety requirements

Each Contracting Party shall take the appropriate steps to ensure that at all stages of radioactive waste management individuals, society and the environment are adequately protected against radiological and other hazards.

In so doing, each Contracting Party shall take the appropriate steps to:

(i) ensure that criticality and removal of residual heat generated during radioactive waste management are adequately addressed;

(ii) ensure that the generation of radioactive waste is kept to the minimum practicable;

(iii) take into account interdependencies among the different steps in radioactive waste management;

(iv) provide for effective protection of individuals, society and the environment, by applying at the national level suitable protective methods as approved by the regulatory body, in the framework of its national legislation which has due regard to internationally endorsed criteria and standards;

(v) take into account the biological, chemical and other hazards that may be associated with radioactive waste management;

(vi) strive to avoid actions that impose reasonably predictable impacts on future generations greater than those permitted for the current generation;

(vii) aim to avoid imposing undue burdens on future generations.

11.1. Measures to ensure the maintenance of subcritical conditions and heat removal

The measures applied to guarantee the maintenance of subcritical conditions at the currently existing spent fuel temporary storage facilities, located on the sites of the nuclear power plants, have been described in Section G of this report. Also dealt with in Section G are the measures to maintain subcritical conditions at the centralised temporary storage (CTS) facility foreseen for spent fuel.

The other high and intermediate level wastes that are expected to be stored at the CTS facility are not by nature susceptible to reaching critical conditions, with the exception of the fissile materials recovered during the reprocessing in other countries of Spanish fuel, these not currently being in Spain.

Notwithstanding the above, limitations have been established regarding the content of fissile materials as part of the acceptance criteria to be fulfilled by waste packages for storage at the El Cabril facility.

As regards measures to guarantee heat removal, the situation is similar to that described above. The measures adopted at the existing and projected temporary storage facilities are those described in Section G of this report. Of the wastes mentioned, only the high level vitrified wastes, currently in France, generate heat in considerable quantities, this having been taken into account in the assessment of the Safety Analysis submitted for approval by the CSN of the generic design of the CTS facility. This issue will be studied in detail in subsequent phases and taken into account prior to the return of these wastes to Spain.

11.2. Measures adopted to ensure that radioactive waste generation is kept as low as possible

As regards the management of low and intermediate level wastes (LILW), although there are no specific requirements in the Spanish legislation that oblige the waste producers to minimise the volumes produced, in practice the minimisation of production has been promoted by the CSN through the requirements applied to ENRESA in relation to optimum use of the disposal capacity of the El Cabril facility.

These requirements have led the nuclear power plants and ENRESA to make joint efforts to reduce the volumes of LILW generated at the Spanish plants. These efforts are governed by a collaboration Agreement that has implied the performance of joint analysis tasks and the investment by ENRESA of more than 11 million Euros in waste volume reduction projects at the nuclear power plants. Mention should be made in this respect of the activities contemplated in the 5th ENRESA R&D Plan (2004/09), which as regards support for installations contemplates the performance of projects for the application of plasma technology, including study of the feasibility of its being implemented at a nuclear facility.

The implementation of these volume reduction projects has allowed the annual production figure to be reduced from 6,500 waste packages (1,430 m^3) in 1990 to the approximately 2,700 packages (600 m^3) that are currently generated by the seven operating nuclear power plants.

Figure 8 shows the reduction in the production of LILW corresponding to the operation of the Spanish nuclear power plants.

Mention should be made also of the joint efforts made by ENRESA and the radioactive facilities (RF's) to reduce the amounts of radioactive wastes generated. In this respect, the annual volume of wastes removed from these producers was reduced by half during the period 1992 to 2003, from some 140 m^3 to approximately 70 m^3. As from mid 2003, and as a result of publication of the ECO / 1449 Order by the Ministry of Economy, there has been an appreciable reduction in waste generation, the current generation values standing at around 25 m^3. Furthermore, the number of contracts between ENRESA and the radioactive facilities has increased to 834, the number of RF's authorised in the country remaining practically constant.

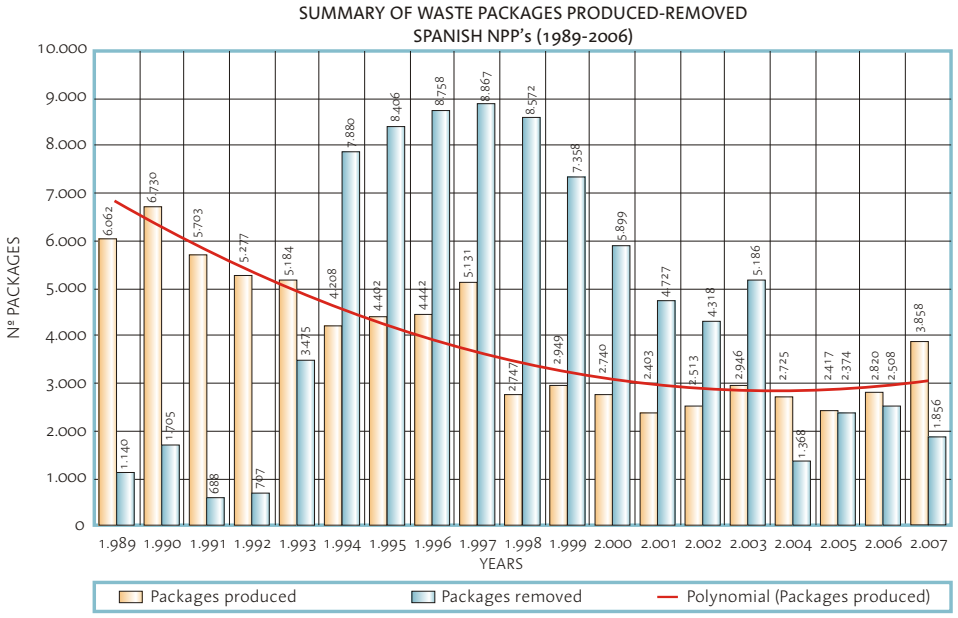

Figure 8. Production of LILW in Spanish NPP operation.

11.3. Measures adopted to take into account interdependencies between different stages of radioactive waste management

As regards the management of LILW, the main objective of all the technical-administrative operations associated with radioactive waste management is to limit the exposure to radiation of the operating personnel and public, minimising the possible immediate and long-term effects on the environment and the generations of the future.

With this aim in mind, the requirements made of an overall radioactive waste management system, of its components and of the final products obtained are defined in terms deriving from the safety and radiological protection conditions established by the Spanish regulatory authority.

As regards the stages of LILW management carried out at the Spanish nuclear power plants, these are subject, among others, to the regulatory process of licensing prior to operation. As part of this process, the licensee is required to draw up and apply the so-called Process Control Programme (PCP) for the operation of systems for the treatment and conditioning of wastes for disposal.

As regards 2nd and 3rd category radioactive facilities for medical, industrial or research purposes, Ministerial Order ECO/1449/2003 (Official State Gazette No. 134 of 05/06/2003) specifies the different aspects to be taken into account in managing the radioactive wastes from such installations.

The CSN required ENRESA to draw up a methodology for the acceptance of waste packages at the El Cabril disposal facility, as well as a set of technical and administrative procedures for its practical implementation, covering both the relationship between ENRESA and the waste producers and activities within the exclusive responsibility of ENRESA in the acceptance of different types of waste packages.

The acceptance criteria for low and intermediate level waste packages were established in accordance with the Ministerial Order of October 9th 1992. The operating permit currently in force for the El Cabril Disposal Facility, granted by Ministerial Order on October 5th 2001, determines that the criteria for the acceptance of wastes at this facility are part of the official operating documentation.

ENRESA has established a methodology for acceptance at the El Cabril LILW disposal facility that implies the performance of a process of characterisation and acceptance of different types of waste packages from different producers, following appropriate tests, with surveillance based on inspections during reception, documentary controls and field inspections of waste production and on the performance of scheduled verification tests on the actual packages received.

ENRESA is currently completing the development of specifications for the acceptance of very low level wastes, for disposal in the new VLLW facility, which will apply the same principles and safety conditions in use at the El Cabril disposal facility.

11.4. Measures for the efficient protection of persons, society and the environment

The provisions of the Spanish regulations that relate to the protection of persons and the environment are included in Section E of this report.

Specific mention should be made of the recent modification, through Law 33/2007, of article 38 of the Nuclear Energy Act (NEA), which, among other things, requires the licensees of nuclear and radioactive facilities to adopt appropriate measures in all the stages of spent nuclear fuel and radioactive waste management in order to suitably protect persons, property and the environment against radiological risks, in the present and the future.

The aforementioned legal modification underlines the importance of direct protection mechanisms for persons and the environment and incorporates the point of view of deferred safety, since in radioactive waste management the remaining radiological risk for persons and the environment needs to be controlled over long periods of time.

As regards the low and intermediate level waste disposal facility (El Cabril disposal facility), the safety principles and criteria emanating from the international organisations have been considered to be directly applicable, and specific safety requirements established in the standards of other countries and regulating installations based on similar technology concepts have been introduced, these having served as a reference in the safety analyses of the Spanish facilities.

The safety principles and criteria relating to radioactive waste management recommended by international organisations such as the International Commission for Radiological Protection and the International Atomic Energy Agency have occasionally been incorporated specifically as conditions for the construction and operation of waste management facilities.

As regards the incorporation of safety requirements established in the standards of other countries, the regulatory authorities have imposed certain operating conditions on the surface disposal facility for low and intermediate level wastes, taking as a reference the safety requirements applied at facilities based on similar technologies in other countries (France, Great Britain, United States).

11.5. Measures for the consideration of biological, chemical and other risks that may be associated with radioactive waste management

The presence in LILW of substances whose toxicity and potentially hazardous nature are associated with causes other than ionising radiations is an undeniable fact. However, the law governing wastes, Law 10/1998, of April 21st, excludes the radioactive wastes regulated by the NEA from its scope of application (Art. 2).

From this legal perspective, the management of radioactive wastes potentially presenting biological, chemical or other risks includes the specific application of measures for the protection of the workers, the public and the environment against such risks, but in all cases with priority consideration given to the radiological risk associated with the wastes. Section E of this report refers to the process of declaration of environmental impact to which nuclear facilities are subjected as part of the authorisation and licensing process.

In addition, and as a preventive measure, limitations are established on the content of such chemical or biological substances that may be present in the LILW disposed of at the El Cabril facility.

The criteria for the acceptance of wastes at this disposal facility include, among other restrictions, those relating to the minimisation of substances whose main potential risk does not arise from radioactivity and of those that may produce exothermal chemical reactions.

The responsibility for declaring the presence of toxic, chemical or biological substances in radioactive wastes is attributed to the producers, who are required to minimise their generation and identify them in order for ENRESA to be able to draw up an inventory of the quantities of certain components at the facility. Working groups made up of ENRESA and nuclear power plant technicians have been set up to deal with this aspect.

11.6. Measures to prevent repercussions for future generations greater than those permitted for the present generation

As has been pointed out above, the Spanish nuclear legislation does not currently include specific provisions relating to the long-term control of radiological risk, and the legal areas relating to the safety principles and criteria to be met by waste management facilities over timescales other than normal operating periods have yet to be fully developed.

This legal shortcoming has required the competent authorities to issue specific statements in those cases in which it has been necessary to establish measures for the protection of future generations aimed at preventing impacts greater than those considered acceptable for the present generation.

Among these are the criteria issued by the CSN in its Six-Monthly Report to the Congress and Senate of December 31st 1985, according to which:

> *The basic objective of radioactive waste disposal facilities, from the point of view of nuclear safety and radiological protection, is to guarantee that the radioactive waste are isolated from mankind and the environment, such that potential releases of nuclides do not give rise to unacceptable exposure of persons to radiation.*

In keeping with the licensing system contained in the basic Spanish nuclear legislation, the operating permit for the El Cabril disposal facility contains the nuclear safety limits and conditions for operation of the facility and the general studies to be carried out for its closure.

In relation to the above, it is indicated that the radiological acceptance criterion established by the CSN to be considered for the long-term presence of wastes on site corresponds to an individual level of risk lower than 10^{-6}/year, or the risk associated with an annual dose equivalent for individuals in the critical group of less than 0.1 mSv.

Preventing actions that might have unacceptable repercussions for future generations implies the planning and implementation of preventive measures within a context of uncertainty, for which reason the analysis of the uncertainties involved in the long-term performance of radioactive waste disposal systems and in the assessment of their consequences is a habitually considered issue.

11.7. Measures to prevent undue burdens for future generations

The current legal framework establishes specific measures relating to the assignment of responsibilities, the provision of funds for the financing of the activities involved and forecasts regarding the needs for institutional controls.

In this respect, the existing legal framework establishes the responsibilities of ENRESA, assigning to the company the specific mission of ensuring the management of the entire installation for waste and spent fuel disposal and of providing for the constitution, application, mechanisms for management and guarantee of the economic fund established for this purpose, and also establishes that the State shall undertake the ownership of the radioactive wastes once they have been disposed of and also the surveillance that might be required following the decommissioning of a nuclear or radioactive facility, following the period of time established in the corresponding decommissioning authorisation.

The specific measures adopted in relation to the El Cabril LILW disposal facility are related to the concept of passive safety adopted during the stage of its lifetime that will following closure. Passive safety means that following its closure the installation will not depend on continuous large-scope active measures, but will be the subject of active and passive institutional controls reinforcing safety and ensuring compliance with the safety criteria specified by the regulatory authorities.

11.8. Assessment of compliance

In view of what has been set out in each of the sections, it is considered that in Spain the general safety requirements established in article 11 of the Convention are met.

Article 12
Existing facilities and past practices

Article 12.Existing facilities and past practices

Each Contracting Party shall in due course take the appropriate steps to review:

(i) the safety of any radioactive waste management facility existing at the time the Convention enters into force for that Contracting Party and to ensure that, if necessary, all reasonably practicable improvements are made to upgrade the safety of such a facility;

(ii) the results of past practices in order to determine whether any intervention is needed for reasons of radiation protection bearing in mind that the reduction in detriment resulting from the reduction in dose should be sufficient to justify the harm and the costs, including the social costs, of the intervention.

12.1. Measures adopted to examine the safety of the El Cabril facility

The El Cabril facility for the definitive disposal of low and intermediate level wastes is the only one existing in Spain for this purpose. The El Cabril facility rests on the concept of a surface repository for radioactive waste disposal with engineered barriers.

The El Cabril nuclear facility currently has an operating permit issued by Ministerial Order on October 5th 2001 which will be valid until such time as the volume available for the disposal of low and intermediate level radioactive wastes in the existing cells is saturated.

12.1.1. Periodic safety reviews.

The operating permit for El Cabril establishes a system of Periodic Safety Reviews (PSR), to be performed every ten years.

The PSR's do not replace the activities of analysis, control and surveillance that are carried out continuously at the El Cabril centre, but are aimed at providing an overall assessment of the safety and radiological protection of the installation and at analysing the experience acquired and ensuring that the licensee is committed to the implementation of possible improvements, taking into account the current situation and whatever new technology-related or regulatory circumstances may have occurred.

ENRESA submitted the first El Cabril PSR to the competent authorities in December 2003, this including the analysis for the period elapsing from the beginning of operation (1992) to the current authorisation.

12.1.2. Regulatory safety control and radiological protection activities at the El Cabril disposal facility

One of the functions of the CSN is to undertake the assessment, inspection and control of the El Cabril disposal facility in order to ensure compliance with the standards and conditions established in its operating permit.

The documentation submitted by ENRESA during the aforementioned authorisation processes and that corresponding to the PSR's is evaluated and analysed by the CSN, which may request as many clarifications, justifications and details as it considers necessary. For the detailed review of the calculations performed by the operator, the CSN may carry out alternative calculations or verification inspections at the offices of the engineering organisations that have performed such calculations.

In 2003 ENRESA requested the modification of the El Cabril facility for the construction and operation of an installation for very low level wastes. In accordance with article 25 of the RNRF relating to the modification of nuclear facilities, it was determined that the proposed modification required prior authorisation for construction and assembly.

The safety criteria applicable to the design and construction of the new facility were previously approved by the CSN in June 2003. The design of the barriers is based on the technical requirements established by the European Union for the definitive disposal of wastes classified as hazardous.

In December 2005 the Secretariat General for the Prevention of Pollution and Climate Change of the Ministry of the Environment issued a Resolution setting out the declaration of environmental impact for the project, in accordance with Royal Legislative Decree 1302/1986, on environmental impact assessment.

A facility for the disposal of very low level radioactive wastes has been in operation since 2008.

12.1.3. Surveillance and control programmes

The operating permit for the El Cabril facility determines that the licensee shall be obliged to measure the efficiency of the surveillance, control and inspection practices carried out at the installation with respect to previously established objectives, such that there be assurance that the structures, systems and components that have an impact on safety and radiological protection during the operation of the facility and in the long term be capable of fulfilling their function and that their performance be as specified in the design bases and adhere to the complementary instructions issued by the CSN.

The process implemented at El Cabril contains the surveillance, control and inspection activities performed at the facility and includes aspects relating to the following:

1. Identification of and requirements applied to the structures, systems and components subjected to surveillance, control and inspection, in accordance with their importance for safety and radiological protection.
2. Acceptance criteria for the different parameters subject to surveillance, control and inspection.
3. The frequency established for the performance of surveillance, control and inspection activities, indicating the criteria applied for their determination.
4. The organisation and responsibilities established for the performance of surveillance, control and inspection and for the subsequent analysis and evaluation of the results obtained.
5. The manual of procedures applicable in the process.

The CSN carries out specific inspections to verify the results of this process and the improvement actions analysed and implemented by the licensee on the basis of the results obtained.

12.2. Measures adopted to examine safety in the management of low and intermediate level wastes at Spanish nuclear facilities

12.2.1. Treatment and conditioning of low and intermediate level radioactive wastes

The installations for the treatment and conditioning of low and intermediate level wastes at the nuclear power plants are based on processes of cementation of humid wastes and compacting to reduce the volume of dry compressible solid wastes. The nuclear plants have also installed sys-

tems for the desiccation of concentrates and sludges, as a result of which important reductions of the original volume of the wastes have been achieved.

Examining the safety of the low and intermediate level waste management installations in place at the Spanish nuclear facilities is included in the on-going safety review programmes of these facilities, the aim being to maintain the level required in the authorisations and improve it in the light of technological progress and new legal requirements.

Also established at the Spanish nuclear facilities is a ten-year Periodic Safety Review (PSR) programme that includes analysis of the operating experience of the waste management systems and the foreseen improvement processes.

Furthermore, the objective of the mandatory Radioactive Waste Management Plan (PLAGERR) document is to establish criteria and instructions ensuring that the management of the radioactive wastes generated at the facilities is safe and optimised in the light of progress made in the standards and technology. It should also guarantee that no radioactive wastes are managed via conventional routes.

In 2001 the CSN promoted the setting up of a working groups made up of representatives of UNESA, Enresa and Enusa Industrias Avanzadas, S.A. with a view to analysing the most appropriate contents and scope for the PLAGERR's. The work carried out by this group has made it possible to accurately define the objectives and contents of these plans.

On completion in 2005 of the pilot application of the document drawn up for the José Cabrera nuclear power plant, the conclusions and lessons learned have contributed to improvement and facilitated subsequent implementation at the rest of the nuclear facilities, through the preparation of a CSN safety guide.

However, during the process of publishing this guide it was considered of interest to set up a specific working group to study the content of the guide in relation to high level wastes and spent fuel and also to undertake a pilot project at the Ascó and Santa María de Garoña nuclear power plants. The lessons learned from this project will be included in future revisions of the CSN guide.

Although the new PLAGERR's have not yet been authorised in keeping with the guide, certain of the improvements foreseen have already materialised at the Spanish nuclear facilities, in line with the objectives that led to these documents being drawn up.

On the one hand, in relation to the control of waste materials, it may be stated that practically all the Spanish nuclear power plants have implemented what is known as the second line of defence, this consisting of the radiological control processes and infrastructures required to reinforce the guarantees associated with the objective of preventing radioactive wastes from being managed via conventional routes.

On the other, there have also been improvements in the systematic approach to and analysis of the information relating to radioactive waste management, the objective being for the producers to more accurately pinpoint those wastes for which the management route has yet to be defined or for which it is possible to implement improvements in current management.

The existing forecasts point to the new plans being drawn up following publishing of the CSN guide on the PLAGERR's, with definitive implementation in late 2008.

12.2.2. Safety in the management of very low level wastes open to conventional management via declassification

In accordance with the system established in Spain for the declassification or clearance of waste materials, based on the technical directives and recommendations of the European Union, the

facilities are required to have a specific authorisation for the management of wastes via conventional routes.

To date the practice of authorising the declassification of certain streams of waste materials has continued at the Spanish nuclear power plants.

Regulatory efforts continue to focus on improving the processes of characterisation and on implementing methodologies in this area allowing for the optimisation of the resources required for performance without negatively affecting the level of quality required.

In this respect, the CSN and the Spanish electricity industry association (UNESA) have undertaken a project for validation of the use of the scaling factors established for low and intermediate level wastes in relation to declassifiable waste materials.

The provisional results of the project show a high degree of validation, although it will be necessary to increase the number of radiochemical analyses for certain radionuclides in order to obtain definitive conclusions and establish specific processes for action in the case of wastes generated in certain operating cycles at some plants.

12.3 Measures adopted to examine safety in low and intermediate level waste management at Spanish radioactive facilities

The strategies for the management of the solid radioactive wastes generated at the Spanish 2nd and 3rd category radioactive facilities are based on temporary storage for their radioactive decay until such time as their radioactive content is such that they may be managed as conventional wastes, outside the radiological regulatory framework. Nevertheless, ENRESA also collects radioactive wastes from these facilities for transfer to the El Cabril disposal centre for conditioning and disposal.

In relation specifically to 2nd and 3rd category radioactive facilities at which non-encapsulated radioactive isotopes are handled or stored, Ministerial Order ECO/1449/2003 (Official State Gazette No. 134 of 05/06/2003), published in June 2003, determines the technical and administrative requirements for the management of solid waste materials with radioactive contents under suitable conditions of safety and radiological protection during all the corresponding phases, from generation to final disposal.

A project is currently being performed by the CSN to analyse the declassification requirements established in Ministerial Order ECO/1449/2003, in order to determine whether it should be updated in the light of the experience acquired during its period of validity and of the European Union and IAEA recommendations in this area.

12.4. Previous practices in relation to low and intermediate level waste management

As of the date of entry into force of the Convention, there are no low and intermediate level waste management facilities that have been decommissioned in the past and that might be the subject of decision-making regarding interventions to reduce any existing radiological detriment.

12.5. Assessment of compliance

In accordance with what has been set out in each of the sections of this article, it is considered that Spain has adopted adequate measures to examine the safety of the existing waste manage-

ment facilities and that adequate mechanisms are in place for their control and for analysis of the experience acquired.

Article 13
Siting of projected facilities

Article 13. Siting of proposed facilities

1. *Each Contracting Party shall take the appropriate steps to ensure that procedures are established and implemented for a proposed radioactive waste management facility:*
   - *(i) to evaluate all relevant site-related factors likely to affect the safety of such a facility during its operating lifetime as well as that of a disposal facility after closure;*
   - *(ii) to evaluate the likely safety impact of such a facility on individuals, society and the environment, taking into account possible evolution of the site conditions of disposal facilities after closure;*
   - *(iii) to make information on the safety of such a facility available to members of the public;*
   - *(iv) to consult Contracting Parties in the vicinity of such a facility, insofar as they are likely to be affected by that facility, and provide them, upon their request, with general data relating to the facility to enable them to evaluate the likely safety impact of the facility upon their territory.*
2. *In so doing, each Contracting Party shall take the appropriate steps to ensure that such facilities shall not have unacceptable effects on other Contracting Parties by being sited in accordance with the general safety requirements of Article 11.*

Spain has provided an overall answer to the issue of low and intermediate level radioactive waste (LILW) management through the El Cabril disposal facility, an essential part of the national LILW management system, in accordance with the limits and conditions established in the facility's operating permit. However, in view of the foreseeable increase in the wastes to be managed as a result of the dismantling of the nuclear power plants, beginning with the José Cabrera plant in 2009, and of the possibility of incidents at other installations, it has been considered necessary to have a facility for the safe and definitive management of very low level wastes.

As regards the management of HLW and SF, and as has been explained in Section B, the construction of a centralised disposal facility is currently foreseen by the year 2012.

13.1. Forecasts regarding new radioactive waste management facilities

13.1.1. Low and intermediate level wastes

Particularly significant as regards improving the capacities of the El Cabril facility is the new "auxiliary conditioning building", which has been designed to allow for the implementation of LILW characterisation and decontamination techniques and new waste treatment systems. It

also includes a storage installation for radioactive sources that is more operational than the existing facility.

Also, with the aim of optimising the disposal capacity of El Cabril", and taking into account those radioactive wastes that are considered to be very low level (VLLW), the Directorate General for Energy Policy and Mines, in agreement with the Nuclear Safety Council and in the wake of an environmental impact declaration by the Directorate General for the Environment, issued a Resolution on February 14th 2006 authorising as a design modification the construction and assembly of a complementary facility for the disposal of very low level wastes at the Sierra Albarrana solid radioactive waste centre ("El Cabril"). Figure 9.

The design of this facility consists of constructing four disposal cells with a capacity for 130, 000 cubic metres of VLLW on the site, separated from the platforms housing the existing waste disposal cells. Figure 10.

The construction works have been completed on the first of these four cells, which will enter into service during 2008. The other three cells will be constructed depending on disposal needs.

Complementary to the cells, a technology building has been constructed. Among other activities this will allow for the reception, stabilisation and conditioning of very low level wastes, as required.

13.1.2. High level wastes

As has been explained in Section B, the temporary management of this type of wastes will be undertaken along with that of spent fuel, this requiring a centralised storage facility that is currently foreseen for the year 2012. This facility has been described in Section G, sub-section 6.1.

The decision regarding the definitive disposal facility for spent fuel and high level waste has been postponed, as a result of which no installation of this type has yet been projected.

Figure 9. Aerial view of the very low level waste facility.

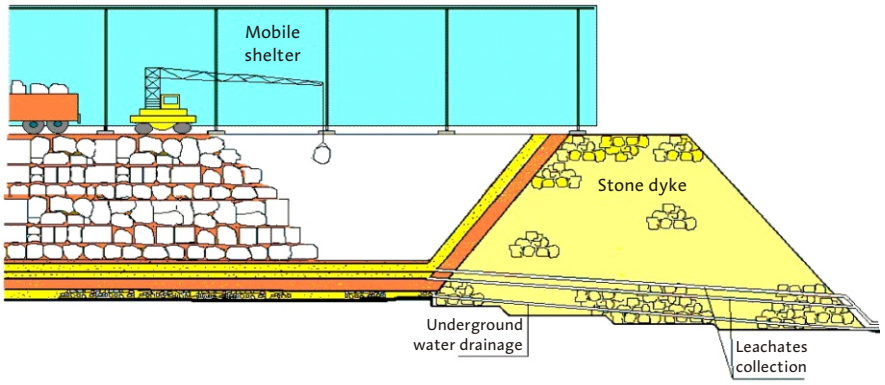

Figure 10. Detail of a cell under construction.

13.2. Criteria for the assessment of safety significant factors relating to the site

A distinction is made in this section between Low and Intermediate Level Wastes (LILW), all of which may be disposed of at the El Cabril facility, and High Level Wastes (HLW), which include those whose radiological characteristics make them unacceptable for disposal at this centre.

✓ LILW

The criteria and factors taken into account for the El Cabril disposal facility, which were presented during the process of licensing of the installation prior to its start-up in 1992, are representative of the methodology and systematic approach to assessment used in Spain for any new site.

The acceptability of the radiological consequences of potential releases to the environment depends on two factors:

1. The magnitude of potential releases of radionuclides, which in turn depends on the physical-chemical form of the wastes disposed of and on the number of natural and artificial barriers to their migration.
2. The nature of the release, depending on the quantities and types of radionuclides contained in the wastes.

These factors were taken into account in the Safety Analysis (SA) for the El Cabril disposal facility. The assessment was performed in keeping with the specific standard applicable to the reference facility, which being French was the Fundamental Safety Rule I.2. This Rule establishes the concept of intrinsic safety, which consists basically of requiring the following of the disposal system (waste and engineered barrier):

1. Minimisation of the transfer of radionuclides to the environment during the operating and surveillance phases;

2. In the phase of free use, the basing of safety on limitation of the inventory and on the characteristics of the geological barrier.

Also taken into account were the two fundamental criteria to be presented by a site for this type of facility: isolation with respect to surface and groundwaters and control of discharges in the event of releases of activity as a result of assumed failures.

This Rule also establishes the design lifetime of the waste isolation devices (engineered barriers) at a maximum 300 years. Consequently, at the El Cabril disposal facility it is estimated that the surveillance and control phase should not exceed this period. This duration may be re-evaluated on the basis of the activity actually disposed of, lower than the envelope considered in the radiological impact analysis, at the end of the operating phase.

The VLLW installation started up in 2008 constitutes a modification to the initial design plans of the disposal facility. In compliance with the Spanish standards, and in particular the RNRF, its construction required authorisation for the modification of the previously existing facility.

The reference facility for this installation is the French very low level radioactive waste disposal facility at Morvilliers. The supporting documentation for the new installation includes pertinent information on the criteria for evaluation of factors influencing safety.

The following **criteria of suitability** have been taken into account in weighting the characteristics of the site:

- Adequate lithological characteristics.
- Low and tectonically stable seismic activity.
- Known and controllable hydrogeology.
- Known hydrogeochemistry.
- Smooth or levellable topography not subjected to flooding.
- Adequate geotechnical properties.
- Conservation of areas potentially usable for extension of the facilities.
- Availability of sufficient information on the site.
- Accessibility and communication.
- Proximity to current facilities.

✓ HLW

In general, aspects relating to evaluation of the site are taken into account throughout all the phases of licensing of nuclear facilities and are in fact the subject of a specific authorisation, the preliminary authorisation. This authorisation, which is accompanied by a characterisation study of the site and of the area of influence of the facility, includes sufficient data on those parameters of the site that might impact nuclear safety or radiological protection, including demographic and ecological data, and on activities relating to land development. The scope of these studies depends on the complexity and lifetime of the installation.

13.3. Criteria for the assessment of radiological repercussions on the environment and surrounding population

As in the previous section, a distinction is made between Low and Intermediate Level Wastes (LILW) and High Level Wastes (HLW).

✓ LILW

When the SA was performed for the El Cabril disposal facility, an important part of it related to assessment of the potential radiological impact of the site during the three phases of operation of the facility:

- In the operating phase, activities relating to waste handling and treatment were studied,
- In the surveillance and control and free use phases, consideration was given to situations referring to the performance of the disposal facility itself.

Scenarios of normal operating and accident situations and of human intrusion during the phase of free use were analysed. In general, the selection of specific hypotheses for each of these situations was performed by rounding up the doses to the critical individual, such that these situations might be considered as the most penalising from the point of view of impact, for which a maximum level was established.

As in the case of the previous installation, the VLLW facility is required to fulfil safety objectives oriented towards the protection of persons and the environment.

The VLLW installation is a modification of the existing facility, for which reason it was included in the SA of the El Cabril disposal facility, using the same criteria and methodology and without varying the maximum inventory of radioactivity authorised for it. As in the previous SA, the situations analysed include present and future conditions, events associated with the normal evolution of the disposal facility and more unlikely events such as intrusion. The analysis had a dual objective:

- The development of acceptance criteria for the definitive management of VLLW.
- The checking of an acceptable level of protection for human health and the environment at present and in the future.

The methodology for performance is based on that established in international forums, such as the ISAM and ASAM projects promoted by the IAEA, and includes the following main elements:

- The context of the study, identifying its timeframe, objectives, radiological protection and safety criteria, etc.
- Description of the system or of the characteristics of its main components: wastes, operating practices, design of facilities, etc.
- Development and justification of scenarios and their evaluation. These scenarios fulfil the two aforementioned objectives.
- Analysis of results.

✓ HLW

As has been pointed out above, the Centralised Temporary Storage (CTS) facility foreseen in the GRWP in force, the generic design of which was approved by the CSN in June 2006, is designed to house all the fuel assemblies from the Spanish nuclear power plants, the high and intermediate level wastes from reprocessing of all the fuel assemblies from Vandellós I NPP and other wastes that, in view of their radiological characteristics, cannot be disposed of at the El Cabril facility.

The measures for assessment of the radiological repercussions on the environment and surrounding population corresponding to the favourable declaration of the CSN on the generic design of this facility, the phase previous to licensing, are included in Section G, Sub-section 6.2 of this report, relating to spent fuel. The contents of this section are applicable also to HLW, since the facility is the same in both cases.

No facility is projected in Spain for the definitive disposal of HLW.

13.4. Public information on the site selection process

The VLLW disposal installation at El Cabril has been built on the same site as the LILW disposal facility, as an integral part of it. Consequently, this installation has been authorised as a design modification to the original facility, for which reason it has not been necessary to carry out any process of public information.

As regards the centralised temporary storage facility, which in addition to SF is expected to house HLW and other intermediate level wastes that, in view of their characteristics, cannot be accepted at El Cabril, the process of public information on site selection is described in Section G, sub-section 6.4.

13.5. Public information on facility safety

The legal provisions and practices relative to public information on the safety of radioactive waste management facilities are the same as those described in Section G, sub-section 6.5.

As regards the CSN, this is due to the fact that the said section describes its obligations to provide access for the public to information on nuclear and radioactive facilities and, therefore, covers the management of the radioactive wastes generated at all such installations, including nuclear power plants, other nuclear facilities such as El Cabril, fuel cycle facilities and installations using radioisotopes in medicine, industry, research and teaching.

As regards the setting up of a local information committee, this refers only to the nuclear power plants and, therefore, to the management and storage and disposal of radioactive wastes generated at them.

13.6. International arrangements

In compliance with article 37 of the EURATOM Treaty, and as has been pointed out in article 6.6 of Section G, Spain is required to provide the European Commission with general data on all radioactive waste disposal projects that might lead to the radioactive contamination of the waters, land or air space of other Member States.

The Spanish experience of compliance with this article for radioactive waste disposal projects is limited to the arrangements made to obtain the operating permit for the El Cabril facility in 1992.

Article 14
Design and construction of facilities

Article 14. Design and construction of facilities

Each Contracting Party shall take the appropriate steps to ensure that:

(i) the design and construction of a radioactive waste management facility provide for suitable measures to limit possible radiological impacts on individuals, society and the environment, including those from discharges or uncontrolled releases;

(ii) at the design stage, conceptual plans and, as necessary, technical provisions for the decommissioning of a radioactive waste management facility other than a disposal facility are taken into account;

(iii) at the design stage, technical provisions for the closure of a disposal facility are prepared;

(iv) the technologies incorporated in the design and construction of a radioactive waste management facility are supported by experience, testing or analysis.

At present the Spanish LILW management facilities are located either at the installations generating these wastes or at the El Cabril facility, where their definitive disposal is undertaken. The first of these have been evaluated and authorised within the process of licensing of the generating facilities themselves, as a result of which this article focuses mainly on the El Cabril facility.

14.1. Limitation of possible radiological consequences for persons, society and the environment

In accordance with the RNRF (art. 12), the construction permit empowers the licensee to initiate the construction of a facility and to apply for the operating permit. In the case of new facilities, this authorisation must be submitted to the competent authorities accompanied by a series of documents, particularly significant among which is the Preliminary Safety Analysis (PSA). The 2008 revision of the RNRF adds the Autonomous Community to the list of addressees of this documentation, with the capacity to present allegations.

The El Cabril disposal facility obtained its construction permit by Ministerial Order on October 31st 1989, after having submitted the corresponding application in accordance with the RNRF then in force[1] in May 1988, although subsequently, in April 1989, a Revision 1 of the General Project and PSA was issued, incorporating the criterion of recoverability of the wastes, this being agreed on following several meetings with the regulatory authorities.

The PSA carried out for the El Cabril disposal facility included the conceptual principles for disposal and consideration was given in the conceptual development of the facility to the experience acquired in countries possessing this type of installations (especially the French La Manche

[1] *Decree 2869/1972, of July 21st; the RNRF currently in force is the one approved by RD 1836/1999, of December 3rd, modified by R.D. 35/2008, of January 18th.*

and L'Aube facilities), as well as to the establishment of basic safety objectives and technical options.

As was set out in the construction permit, the general safety objectives defined for the El Cabril facility were as follows:

1. Immediate protection, during the operating phase, and deferred protection, during the surveillance and control and free use phases, for persons and the environment.
2. Allow for the free use of the site within a reasonable time, i.e., allow the land to be used for any purpose without limitations caused by the facility.

One of the objectives imposed by and included in the construction permit for the facility was zero releases, as a result of which the design is based on the reuse of liquid radioactive wastes in the different conditioning processes. This criterion extended both to the building area and to the disposal cells, for which the respective collection, treatment and conditioning systems are available.

Compliance with the objectives is accomplished through the application of a series of basic criteria, which in the case of the El Cabril disposal facility are as follows:

- ✓ Isolation of the radioactivity stored from the surroundings (or biosphere) during the operating and surveillance and control phases, thanks to the suitability of the site and the elements of the facility.
- ✓ Limitation of the radionuclides present in the disposal units, such that the radiological impact is acceptable under any foreseeable circumstance and the residual activity is compatible with free use of the site.
- ✓ Straightforward recoverability of the wastes disposed of, through the incorporation of disposal units allowing the wastes to be handled and placed in the cells without any type of structural link.

As has been indicated in previous paragraphs, the construction of the new complementary installation for VLLW at El Cabril has been addressed as a design modification proposal (DMP) regarding the previously existing facility and has been performed sharing the same safety criteria with it. As a result the basic safety criteria of this complementary installation are the same as those set out for the overall facility, but using a technology and a set of conditions adapted to the type and risk associated with the wastes considered.

The arrangements for the design modification licence, as established in articles 26 and 27 of the RNRF, have required the performance of a series of tests, as defined in article 25 of this Regulation. These tests affect the VLLW disposal area and the VLLW reception and conditioning building.

14.2. Technical provisions for the decommissioning of radioactive waste management facilities

The nuclear power plants currently in operation in Spain received their construction permits during the 1960's (first generation plants: Santa María de Garoña, Vandellós I, in the dismantling process, and José Cabrera, in the decommissioning phase), the 1970's (second generation plants: Almaraz I and II, Ascó I and II, Cofrentes) and the end of the 1970's and beginning of the 1980's (Trillo and Vandellós 2). At the end of the operating phase of the plants, preparatory activities will be carried out for ENRESA to undertake ownership and begin dismantling activities, in accordance with appendix J of the type contract between each of the nuclear power plants and ENRESA.

In accordance with the standards in force, the documentation to be submitted along with the application for the construction permit must include technological, economic and financial forecasts for dismantling and decommissioning. The 2008 revision of the RNRF includes an extension to article 30 referring to the request for authorisation for dismantling, which details the contents of each of the documents to be submitted and adds as part of this dossier the plan for the control of declassifiable materials, reserving for the CSN the capacity to define the scope, contents and development of the aforementioned documentation.

14.3. Technical provisions for closure of the radioactive waste disposal facility

The PSA for the El Cabril disposal facility, submitted in order to obtain the construction permit, includes the systems designed for closure of the facility and those that will be operative during the surveillance and control phase.

At the end of the operating phase of the facility, closure activities will be carried out to prepare it for the next phase. It will be necessary to complete the disposal works and their annexes (coverage, water networks), the disassembly and removal of the operating installations (constructions and equipment) no longer required and the installation of all the elements required for the surveillance and control phase not previously installed.

The design objectives of the surveillance devices and the relevant actions to achieve these objectives may be summarised in the following terms:

- ✓ Checking of the integrity of the disposal cells.

  With this aim in mind, ENRESA will maintain the ownership of the property, thus avoiding any deterioration as a result of uncontrolled human intervention and ensuring the surveillance and maintenance of the coverage, the seepage control network and the surveillance devices.

  On completion of the operating phase, and prior to moving on to the phase of surveillance and control, the filled and closed disposal cells will be protected against the weather by means of a long-term covering layer, designed and constructed such that the maintenance required under normal conditions is reduced to a minimum and that there is protection against erosion, water and temperature changes. In this respect it should be pointed out that in 2007 ENRESA initiated a test covering layer project for the selection of the definitive coverage for the north and south platforms.

  The seepage control network, which will operate with minimum maintenance requirements during the operating and surveillance and control phases, is designed for the easy identification and location of any possible anomaly in any of the disposal cells. In this respect, the piping of the network has been installed in accessible reinforced concrete underground galleries running longitudinally below the cells, these being designed with a slope and dimensions sufficient to ensure drainage by gravity to the final control tank.

- ✓ Radiological surveillance in the environment close to the facility. A specific Environmental Radiological Surveillance Programme will be drawn up for this purpose, which will be subject to approval by the authorities prior to closure. This programme will be based on the experience acquired, the checks performed and the resources used during the operating period.

As regards the new complementary VLLW installation, integrated into the El Cabril disposal facility, a complementary phase of surveillance is foreseen following closure, followed by a post-surveillance phase during which a loss of records, and consequently unrestricted use, is assumed. During the first of these, tracking of the performance of the disposal system will be carried out for some 30 years, followed by passive surveillance. The maximum surveillance period adopted is 60 years, although the fact that the location is El Cabril may lead to the consideration of longer periods.

14.4. Technologies used for radioactive waste management

✓ **Nuclear power plants:**

The radioactive waste management facilities existing at the Spanish nuclear power plants were designed and constructed as part of the plants themselves, in accordance with the standards applied at the reference plants, the United States and Germany. The introduction and development in the Spanish standards of the concept of the "reference plant" guarantees the incorporation of consolidated and proven technology, without preventing the introduction of consolidated innovations.

At certain plants there were subsequent modifications to improve the treatment or conditioning of the different operating waste streams and increase the capacity of the temporary storage resources available.

✓ **El Cabril disposal facility:**

As has been pointed out above, the conceptual development of the disposal facility was based on the experience acquired in those countries that possessed this type of installations and a set of basic safety objectives and technical options. As a result of these considerations the surface disposal model was selected, with the adoption of engineered barriers, the concept developed using the French disposal centres as a reference.

Prior to the start-up of the El Cabril LILW disposal facility, and in accordance with the RNRF of 1972, the installation was subjected to a programme of pre-operational verifications that included testing and checking methods to guarantee the correct operation of the different facilities and equipment, in relation both the nuclear safety and radiological protection and to the applicable industrial and technical standards.

Analogous to the above, the auxiliary installation for VLLW takes as a reference the facilities operating in other countries, fundamentally the TFA facility at Morvilliers, in France. In this case the technologies to be used have already been experienced operationally in Spain.

14.5. Assessment of compliance

The Spanish legislation includes a formal procedure for the granting of construction permits for nuclear facilities that includes design review, the surveillance of construction and verification of suitability through a programme of pre-nuclear tests, the results of which are required to be approved by the CSN.

The design and the technologies used at the radioactive waste management facilities existing in the country have been developed in accordance with national and international safety regulations and standards and with other applicable standards that are widely recognised and used in this field.

As a result, the contents of article 14 of the Convention are considered to be duly met.

Article 15
Assessment of safety of facilities

Article 15. Assessment of safety of facilities

Each Contracting Party shall take the appropriate steps to ensure that:

(i) before construction of a radioactive waste management facility, a systematic safety assessment and an environmental assessment appropriate to the hazard presented by the facility and covering its operating lifetime shall be carried out;

(ii) in addition, before construction of a disposal facility, a systematic safety assessment and an environmental assessment for the period following closure shall be carried out and the results evaluated against the criteria established by the regulatory body;

(iii) before the operation of a radioactive waste management facility, updated and detailed versions of the safety assessment and of the environmental assessment shall be prepared when deemed necessary to complement the assessments referred to in paragraph (i).

15.1. Measures adopted prior to the construction of low and intermediate level waste management facilities

The low and intermediate level waste management facilities existing in Spain are the treatment plants and temporary storage facilities located at the nuclear power plants, the Juzbado fuel assembly manufacturing facility and the CIEMAT nuclear facility. Additionally, there are systems for the treatment, conditioning and temporary storage of wastes at the El Cabril disposal facility, which also has licensed installations for the definitive disposal of low and intermediate level wastes and for very low level wastes.

The radioactive facilities at which ionising radiations are applied for medical, industrial and research purposes also have adequate infrastructures for the temporary storage of the wastes they generate, until such time as they are delivered to the authorised management company (ENRESA).

Radioactive waste management facilities may be classified as nuclear or radioactive facilities, depending on whether or not they handle nuclear substances, as established in the Nuclear Energy Act and the RNRF in force. Section E and Annex B of this report include detailed information on the process of authorising such facilities.

The process of authorisations demanded of nuclear facilities and radioactive facilities involved in the nuclear fuel cycle includes the successive granting of the following authorisations:

- ✓ Preliminary or site authorisation.
- ✓ Construction permit.

✓ Operating permit.

Prior to the construction of a waste management facility, and if it is classified in the category of nuclear facilities, the licensee shall have obtained a preliminary authorisation. Prior to its operation the licensee shall obtain a construction permit.

Among the documents to be submitted by the licensee of the preliminary authorisation in support of his application for the construction permit (Art. 17e) is a Preliminary Safety Analysis (PSA).

The PSA shall contain a description of the site and surrounding area, with updated data on parameters having an impact on safety and radiological protection, including demographic and ecological data and information on land and water uses, as well as whatever additional data might contribute to a better understanding of the site and affect the plans for the surveillance and verification of the aforementioned representative parameters.

The PSA shall also contain a description of the proposed facility, which shall include the criteria applied in the design of the components or systems on which the safety of the installation depends and an analysis of foreseeable accidents and their consequences.

In addition, prior to the authorisation for construction of the facility a radiological analytical study shall be performed, which will estimate theoretically the potential radiological impact of the installation on the population and the environment. The results of this study shall be incorporated in the documentation of the PSA and shall serve as a basis for the preparation of the Pre-operational Environmental Radiological Surveillance Programme (PVRAP), which will allow the reference level or radiological background of the monitored zone to be established.

In parallel to the arrangements for the construction permit, the licensee shall have initiated the procedures corresponding to the administrative authorisations required in areas other than the nuclear.

In the case of radioactive waste management facilities associated with radioactive installations other than those belonging to the nuclear fuel cycle, an exclusive operating permit will be required. Applications for this permit shall be accompanied by a "descriptive report", which shall include among other things the solid, liquid and gaseous radioactive waste management systems.

The application shall also be accompanied by a Safety Analysis (SA), which shall consist of an analysis and assessment of the risks that might arise as a result of the normal operation of the facility or of some incident. Sufficient data shall be included for the competent authorities to be able to analyse the risks posed by the facility, independently of that submitted by the applicant.

15.2. Measures adopted prior to the construction of low and intermediate level radioactive waste disposal facilities

The only facility existing in Spain for the disposal of low and intermediate level radioactive wastes (El Cabril disposal facility) is a nuclear facility, as a result of which the system of authorisations and safety assessments indicated in Section E of this report was applicable to it prior to its construction.

Although the RNRF does not explicitly mention aspects relating to the safety of radioactive waste disposal facilities, in the Spanish practice of licensing of the El Cabril facility it has been interpreted that all requirements relating to the safety of the facility should be taken into account, as regards both the operating phase and the phase to be initiated after closure.

In its agreement dated February 3rd 1987, the CSN also adopted as a radiological criterion of acceptance, for application in the assessment of long-term radiological impact, a risk of less than 10^{-6}, or an equivalent dose for the individuals belonging to the critical group and involved in the postulated scenarios of less than 0.1 mSv/y.

During the process of authorisation for the construction of El Cabril, the licensee submitted the PSA to the competent authorities as part of the regulatory documentation. This included the corresponding analyses of the possible future evolution of the disposal system, taking into account the mechanisms for the release and migration of radioactivity, the exposure routes for the members of the public and analysis of the radiological consequences of the human intrusion scenarios postulated.

In particular, prior to constructing the facility post-closure safety analyses were carried out, the study including various scenarios of exposure contemplated by the French RFS-I.2 standard.

The fundamental objectives considered in the conceptual design of the facility were as follows:

1. The immediate and deferred protection of persons and the environment.

   Immediate protection covers the operating phase of the disposal facility, while deferred protection covers the phases of post-closure surveillance and the phase of free use.

   During these phases protection will be ensured against the risks associated with the dissemination of radioactive substances, throughout the necessary time period and in all plausible situations.

2. Limitation of the duration of the surveillance phase.

   The minimum duration of this phase shall be proposed by the licensee on the basis of the studies of radiological impact, but should not exceed 300 years, such that after this period it is not necessary to establish restrictions on the use of the site.

The conceptual design of the facility shall allow for reliable, continuous and efficient surveillance throughout the operating and surveillance phases, in order to verify the absence of any dissemination of radioactive substances. This shall be accomplished by controlling run-off water, seepage and drainage waters and groundwaters. The control devices shall make it possible to identify the part of the facility that might have been the point of origin of the dissemination of radioactive substances.

The conceptual design of the facility and control devices and the works performed shall allow for efficient intervention during the operating and surveillance phases, this including the recovery of the wastes if necessary, in the hypothetical event of an eventual dissemination of radioactive substances. During the operating and surveillance phases it shall be possible to maintain the integrity and characteristics of the covering materials as an integral part of the second confinement barrier.

As regards the new installation for the disposal of very low level wastes, its licensing is governed by article 25 of the RNRF. The licensee obtained authorisation for development and assembly in 2005 and the design modification permit in 2008.

15.3. Measures adopted prior to the operation of low and intermediate level radioactive waste management facilities

Once the licensee of a nuclear facility has the construction permit and has performed the pre-nuclear tests, he may apply to the competent authorities for the operating permit for the installation.

Applications for operating permits for nuclear facilities must be accompanied by a series of documents that will, where appropriate, update the contents of the documents submitted with the request for the construction permit. Among these documents is the SA, which must contain the information necessary to analyse the facility from the point of view of nuclear safety and radiological protection, as well as to analyse and assess the risks deriving from the operation of the facility under both normal and accident conditions.

In particular, the SA shall include the complementary data on the site and its characteristics obtained during the construction of the facility, along with a description thereof, with reference to radioactive waste collection and disposal systems and to any other system or component of significance from the point of view of the safety of the facility.

The SA shall include an analysis of accidents foreseeable at the facility and of their consequences, a radiological analytical study and an operational environmental radiological surveillance programme for assessment of the impact of the operation of the installation.

The nature and quantity of the radionuclides that may be stored at the facility shall be determined, and the possible routes for their transfer to the environment shall be analysed for all situations considered to be plausible, taking into account their physical and chemical form and the waste conditioning mode. The studies aim to demonstrate that the transfers produce a radiological impact that is as low as possible and in any case below the restrictions established. It shall also be demonstrated that radioactive decay during the surveillance phase proposed will allow for the free use of the site.

These studies have allowed the licensee to establish average, maximum and limit values for the long-term mass activity of the radionuclides in the waste packages and the total acceptable quantity of these radionuclides.

The studies performed refer to the following:

- ✓ Transfer to the environment by water, which must be based on an in-depth understanding of the hydrogeology of the site and must consider the following:
- ✓ Geomechanical studies and the evolution of geological stability and of the facility itself with time, including the stability of the hydrographic network with respect to the effects of an eventual seismic event.
- ✓ Studies of chemical compatibility between the materials constituting the conditioned wastes, backfill materials, engineered structures, linings and natural media.
- ✓ Determination of the leaching rates of the different radionuclides and of the physical and chemical forms of the leachates, as well as their evolution with time depending on the stability of the materials constituting the different types of wastes under conditions representative of the disposal zone.
- ✓ Assessment of radionuclide transfer speeds and rates in the artificial barriers and natural medium, using in situ studies to the extent possible.
- ✓ Studies of radioactivity transfer along biological chains, especially critical transfer routes on the basis of demographic, hydrological and agricultural data for the region concerned.
- ✓ Transfer to the environment by air, which may take place by dispersion or suspension of dust produced by incidents during the operating and surveillance phases or as a result of subsequent human works or constructions.

The studies centre particularly on the radiological consequences of major public works (roads) and the creation of human habitats on the site of the facility.

The studies of transfer to the environment by water and air are carried out by voluntarily considering pessimistic hypotheses. In particular, it is considered that as from the end of the surveil-

lance phase of the facility, the first and second confinement barriers offer no resistance to human intrusion and have lost their confinement capacity.

The approach adopted in Spain for safety assessment is that recommended by the IAEA, which implies the following generally iterative or superimposed activities:

- ✓ Definition of assessment objectives, safety requirements and criteria regarding behaviour.
- ✓ Acquisition of information and description of the disposal system, wastes and the characteristics of the site and its structures.
- ✓ Determination of FEP's (Features, Events and Processes) that might influence long-term behaviour.
- ✓ Preparation and testing of conceptual and mathematical models of the performance of the system and its components.
- ✓ Determination and description of scenarios of interest.
- ✓ Determination of potential routes for radionuclide transfer from the facility to human beings and the environment.
- ✓ Performance of assessment by applying conceptual and mathematical models.
- ✓ Evaluation of the reliability of the assessment.
- ✓ Comparison of the assessment results with the safety requirements assigned.

The model preparation approach selected must be documented clearly and completely, along with the other aspects considered as it develops. The documentation must ensure a record allowing for the traceability of all the hypotheses adopted and decisions taken during development and application for the preparation of the models selected.

In addition, the RNRF establishes (Art. 20 j) that the documentation submitted in support of the application for the operating permit should include forecasts regarding the dismantling and decommissioning of the facility, indicating the final disposal of the wastes generated and including the cost study and economic and financial forecasts guaranteeing closure.

As has already been pointed out, and as regards radioactive waste disposal, Directive 97/11/CE specifies that an Environmental Impact Assessment (EIA) will be required for final repositories for irradiated nuclear fuel, repositories for radioactive wastes and temporary storage facilities (projected for more than 10 years) for irradiated nuclear fuel or radioactive wastes at locations other than those in which they were produced.

The EIA requires the licensee of the construction permit to draw up and submit an environmental impact study, indicating possible alternatives and an environmental surveillance programme during performance of the activity, following authorisation.

The Declaration of Environmental Impact (DEI) is drawn up in coordination between the Ministry of the Environment and the CSN, each within their respective realms of competence.

According to Royal Decree 1349/2003, on the ordering of ENRESA's activities and their financing, this public company shall be responsible for permanently maintaining the archive on the inventory of wastes deposited in radioactive waste storage or disposal facilities. The company shall be responsible for such custody even in the case of facilities that have been decommissioned or closed.

15.4. Assessment of compliance

In view of what has been set out in each of the sections of this article, and as regards low and intermediate level wastes, it is considered that Spain has adopted adequate measures to assess the safety of waste management and disposal facilities prior to their construction and operation.

Article 16
Operation of facilities

Article 16. Operation of facilities

Each Contracting Party shall take the appropriate steps to ensure that:

(i) the licence to operate a radioactive waste management facility is based upon appropriate assessments as specified in Article 15 and is conditional on the completion of a commissioning programme demonstrating that the facility, as constructed, is consistent with design and safety requirements;

(ii) operational limits and conditions, derived from tests, operational experience and the assessments as specified in Article 15 are defined and revised as necessary;

(iii) operation, maintenance, monitoring, inspection and testing of a radioactive waste management facility are conducted in accordance with established procedures. For a disposal facility the results thus obtained shall be used to verify and to review the validity of assumptions made and to update the assessments as specified in Article 15 for the period after closure;

(iv) engineering and technical support in all safety-related fields are available throughout the operating lifetime of a radioactive waste management facility;

(v) procedures for characterization and segregation of radioactive waste are applied;

(vi) incidents significant to safety are reported in a timely manner by the holder of the licence to the regulatory body;

(vii) programmes to collect and analyse relevant operating experience are established and that the results are acted upon, where appropriate;

(viii) decommissioning plans for a radioactive waste management facility other than a disposal facility are prepared and updated, as necessary, using information obtained during the operating lifetime of that facility, and are reviewed by the regulatory body;

(ix) plans for the closure of a disposal facility are prepared and updated, as necessary, using information obtained during the operating lifetime of that facility and are reviewed by the regulatory body.

16.1. Waste management at nuclear and radioactive facilities

16.1.1. Operating permit: limits and conditions. Operating experience

The RNRF establishes, in relation both to nuclear and radioactive facilities, that the MITYC shall be responsible for adopting resolutions regarding all types of authorisations, following a report by the CSN and whatever decisions and reports might be appropriate.

The data and documentation that the licensee is required to include in applications for the different authorisations have been specified in Section E and Annex B of this report. As has been pointed out in the aforementioned section, the RNRF makes a distinction between the operating permit process to be adhered to by the licensees of radioactive and nuclear facilities and in turn, and in relation to radioactive facilities, distinguishes between those associated with the nuclear fuel cycle and those others that are associated with scientific, medical, agricultural, commercial or industrial purposes.

a) The following may be stated in relation to radioactive facilities:

   1. For radioactive facilities relating to the nuclear fuel cycle, applications and arrangements for and the granting of authorisations are regulated in accordance with the provisions established for nuclear facilities, the corresponding documents being adapted to the special characteristics of these installations.

   2. In the case of other radioactive facilities, the application shall be accompanied at least by a description of the facility, the safety analysis, a verification of the facility, the operating regulation, a rundown of the foreseen personnel and organisation and definition of responsibilities, the site emergency plan and forecasts regarding decommissioning and the economic coverage foreseen. In this case the 2008 RNRF establishes specifically that it shall be accompanied by an economic investment budget and that 1st category facilities shall also attach a description of the site and a security plan and shall extend their Operating Regulation to include a quality assurance manual, a radiological protection manual and the corresponding operating technical specifications.

   Specifically, the licensee of each radioactive facility shall be responsible for its dismantling and decommissioning. The request for dismantling shall be accompanied by an inventory of radioactive wastes and materials, along with their destination and the measures taken for the dismantling, and where appropriate the decontamination, of the facility and an economic report, including the cost of decommissioning and forecasts for its financing.

b) As regards nuclear facilities, the operating permit is granted provisionally for the time required to carry out the nuclear testing programme to assess the nuclear safety of the facility and analyse its results. Following this, the MITYC, having received the report from the CSN on the results of the tests, the possible modifications to be included in the OTS's and the conditions for renewal of the permit, will issue the new operating permit for the corresponding period. The annex of operating permits includes the limits and conditions to be fulfilled by nuclear facilities during operation, compliance being immediate in certain cases and over a fixed period in others.

Furthermore, the RNRF establishes that applications for operating permits for nuclear facilities must include a radioactive waste and spent fuel plan (PLAGERR) incorporating, where appropriate, the contracts established with management companies and including, among other things, a system for possible waste declassification and a study of dismantling and decommissioning forecasts, describing the final disposal foreseen for the wastes generated and a study of the costs and economic and financial forecasts guaranteeing decommissioning. The 2008 revision of the RNRF adds in article 20 the submittal of a security plan, which will be dealt with confidentially.

The PLAGERR for each facility is part of the objective of improving the management of the wastes produced. During the first quarter of each calendar year the licensees are required to submit a report on the activities performed within the framework of the plan to the Directorate General for Energy Policy and Mines.

The conditions attached to the operating permit also require the licensee to analyse his in-house operating experience and the applicability to his facility of the events notified by the Spanish plants, along with the most important experiences reported by the international nuclear industry, mainly safety equipment and service suppliers. The results of these analyses are reflected in an annual report submitted to the CSN for evaluation.

16.1.2. Operating, maintenance, radiological surveillance, inspection and testing procedures

In accordance with the RNRF, the safety analysis to be submitted along with the application for the operating permit for a nuclear facility includes the operating environmental radiological surveillance programme, the operating regulation, the operating technical specifications and the quality assurance manual.

The licensee is required to submit a series of reports and documentation for the regulatory control of his activities, as established by the RNRF and by the limits and conditions attached in the annex to the operating permit. These reports are different for nuclear and radioactive facilities:

- ✓ For the first the licensees are required to submit to the MITYC and the CSN, among others, a monthly operating report on the most significant activities performed and the operation of the facility, and an annual report including the results of the environmental radiological surveillance programme and the personnel dosimetry controls.
- ✓ In the case of radioactive facilities the licensee is required to submit an annual report containing a summary of the operations log and the statistical results of the personnel dosimetry controls.
- ✓ In the case of radioactive facilities belonging to the nuclear fuel cycle, this annual report is quarterly and the licensees are also required to submit an annual report including the results of the environmental radiological surveillance programmes.

Furthermore, the CSN is empowered to perform all types of inspections at nuclear and radioactive facilities in order to ensure compliance with the conditions established in the permit and in the official operating documents approved, this including the resident inspectors in the case of the nuclear power plants.

At present the CSN has two resident inspectors at each of the operating nuclear power plants, their main mission being to inspect and observe the operating activities carried out at the plants and the information on them submitted to the CSN.

16.1.3. Engineering and technical support services

As established in the RNRF, the Operating Regulation, a document included in the application for or renewal of the operating licence, contains information on job posts with nuclear responsibilities and the organisation and functions of the personnel attached to the facility, defining the basic initial and on-going training programmes. In addition, in the year 2000 the nuclear facilities were required to develop their own procedures to analyse any organisational changes that implied a reduction in human resources, this being extended in 2002 to include all types of changes, and to inform on minimum staffing and technical capacities.

The organisation of all the nuclear facilities is very similar, with an organisation located off site and performing support functions and the operating personnel performing functions directly relating to plant activities. In many cases this support organisation includes responsibilities relating to fuel and radioactive waste management.

On site, the operations manager or head of the facility is responsible for the operation and maintenance of the installation within the conditions established in the operating permit and has under his charge the organisations units required to perform the activities involved, among them the management of wastes and effluents and technical and engineering support for operations.

The periodic safety reviews associated with renewal of the operating permits for each nuclear power plant include a programme for the assessment and improvement of safety in relation to organisation and human factors. The plants have already published their programmes and the organisations of the licensees have been adapted for their performance, although they cannot be considered to be fully operative. The objective of these programmes is to guarantee the adoption of adequate measures to assess the capacities and limitations of human actuations.

The CSN carries out activities to verify that the processes used by the licensees to maintain the staffing, competence and motivation of their in-house and contracted human resources in all cases guarantee the maintenance and improvement of the safety of the nuclear facilities. Among these activities are the approval of complementary technical instructions, the establishment of conditions, the drawing up of proposals and the acceptance of commitments relating to the integrated safety management and investment management systems to be implemented at the plants.

16.1.4. Characterisation and segregation of wastes

In Spain, the management of LILW is based on the El Cabril facility. In accordance with the successive operating permits, ENRESA is authorised to dispose of conditioned LILW in the platform cells as long as the acceptance criteria established for definitive disposal are met. It is also authorised to carry out the necessary tests and checks for LILW characterisation.

The contracts between ENRESA and each of the waste producers establish the responsibilities of the latter, making a distinction between radioactive and nuclear facilities.

- ✓ In the case of radioactive facilities, the producer is required to:

  1. Request the removal of his wastes on the basis of the existing agreement (type contract in force, approved by the Directorate General for Energy Policy and Mines),
  2. Optimise waste volumes (segregation at the point of origin),
  3. Estimate activity, and
  4. Facilitate subsequent management by adapting the way in which the wastes are presented to the foreseen treatment. These wastes will be conditioned at the El Cabril disposal facility.

  ENRESA supports these producers in the task of segregation by organising initial and on-going training courses and supplying the packaging for each waste stream. Before removal, ENRESA specifically checks for compliance with the acceptance criteria.

- ✓ In the case of nuclear facilities, the operating and waste management procedures of each installation include waste segregation, conditioning and temporary storage activities and the methods to be used to minimise waste production.

  The methodology for the acceptance of LILW produced by the nuclear facilities is based on the preparation of specific acceptance documentation for each waste package type and producer, including a description of the characteristics and activity of the wastes and the waste package production processes. Compliance with the acceptance criteria will be specifically checked by ENRESA. In this respect,

ENRESA has implemented a system of inspections, production controls and verification tests that guarantees that the waste packages received at the El Cabril disposal facility comply with the acceptance criteria, for which it applies to the different types of packages generated at the nuclear facilities a quality methodology and criteria previously authorised by the regulatory authorities.

In the case of proposals for the production of new waste package streams, ENRESA performs a series of tests and measures prior to conditioning at the installations of the nuclear facility aimed at determining the properties and characteristics of the type package and compliance in both cases with the acceptance criteria in force. Following approval, the resulting production of waste packages will also be subject to production controls tests and, subsequently, to the technical verification tests performed at the laboratory of the El Cabril facility.

16.1.5. Reporting of events

The RNRF establishes that the licensee of an authorisation, for both nuclear and radioactive facilities, is obliged to submit reports to the Directorate General for Energy Policy and Mines and the CSN on any event implying an alteration in the normal operation of the facility or potentially affecting nuclear safety or radiological protection.

Law 33/2007, reforming Law 15/1980 by which the Nuclear Safety Council was created, and the RNRF itself, also establish that the workers at nuclear and radioactive facilities shall be obliged to report any event that might affect the safe operation of such facilities, protecting them against possible reprisals.

Furthermore, in compliance with the RNRF, the nuclear facilities have a Site Emergency Plan that includes the measures contemplated by the licensee and the assignment of responsibilities to respond to accident conditions, the objective being to mitigate their consequences, protect the personnel of the facility and immediately notify the competent authorities of their occurrence, including an initial assessment of the circumstances and of the consequences of the situation.

With a view to orienting the licensees of nuclear power plants regarding the events to be reported to the Nuclear Safety Council, in 1990 the CSN issued Safety Guide GSG-01.06 "Reportable events at operating nuclear power plants". Given the time that has elapsed since the publishing of this Guide, and with a view to taking advantage of the experience acquired in its specific application over the years, it was considered necessary to revise the reporting requirements applicable to these facilities. As a result, in July 2006 the CSN issued Council Instruction IS-10, which establishes the criteria for the reporting of events to the CSN by the nuclear power plants. This Instruction establishes the reporting criteria and includes reportable events, specifying the maximum time for the notification of each to the Nuclear Safety Council.

16.2 Radioactive waste management at El Cabril

16.2.1. Operating permit: limits and conditions. Operating experience

The El Cabril solid radioactive waste disposal facility obtained its first provisional operating permit by Ministerial Order on October 9th 1992. The current operating permit, approved by Ministerial Order on October 5th 2001, will remain valid until such time as the available disposal volume of the existing cells is saturated. ENRESA is required to carry out periodic safety reviews every 10 years allowing for the updating of the operating conditions if the operating experience or new technological or regulatory circumstances were to make this advisable. Likewise,

SA revisions will be carried out as a result of the updating and improvement of the long-term safety analysis and design modifications.

The operating permit is granted in accordance with the mandatory updated documents contained in the RNRF in force at the time (Safety Analysis, Operating Specifications, etc.), to which are added the disposal unit acceptance criteria. The limits and conditions on nuclear safety and radiological protection establish that operation of the facility shall be carried out in accordance with the corresponding revision of these documents.

The SA shall contain all the information required for analysis of the facility from the point of view of nuclear safety and radiological protection, differentiated for the operating phase and the control and free use phases, along with an analysis and assessment of the risks deriving from its operation under both normal and accident conditions and for the three phases of its lifetime.

The Operating Specifications describe the general conditions of operation of the El Cabril disposal facility. Part of these conditions are the limit values of certain parameters relating to the radiological capacity of the facility, the characteristics of wastes acceptable at the installation for incorporation in containers to form disposal units, the properties of these units and the conditions imposed on effluent releases during the operating phase. The following is also indicated:

1. The actions to be taken in circumstances implying non-compliance with a given limit condition or value.
2. The operating conditions and surveillance requirements (revisions, checks, calibrations, etc.) to which systems, equipment and components important for safety and radiological protection are subjected.

Each of the individual treatment and conditioning activities is described in documents known as Operating Instructions (OI's), which include all the activities covered by the instruction, the initial and operating conditions of the system, the operating limits and requirements, actions to be taken in the event of anomalies, alarms and modes of action for each of the systems of the facility, both those relating to waste management and the auxiliary systems.

These documents are drawn up and revised periodically, including the operating experience and the different modifications implemented in the different systems. These activities are undertaken jointly by the organisations responsible for design and operation.

As a complement to the operating activities, the facility has a maintenance plan and an organisation for its development. This plan is articulated by way of general procedures. All the tasks carried out within this plan are supported by a computer system, SGIM, which facilitates and orders the different activities to be performed.

Maintenance of the equipment is classified in three different types: preventive, predictive and corrective, and divided between the three main maintenance specialities: mechanical, electrical and instrumentation and control.

On the basis of the data obtained from operating experience and maintenance, the organisations involved in the design of the facility and in these activities hold periodic meetings to draw up the improvement plans. These activities are regulated in a procedure known as the "Design modifications procedure", which establishes each of the aspects involved in this process.

16.2.2. Operating, maintenance, radiological surveillance, inspection and testing procedures

The October 2001 operating permit for the El Cabril disposal facility contemplates the possibility of the MITYC requiring the implementation of corrective actions in view of the experience acquired from operation of the installation, from the results of other on-going assessments and

analyses and from the results of inspections and audits. During 2007, the CSN performed 10 inspections at the El Cabril facility.

Furthermore, this authorisation establishes the obligation to submit reports to the CSN during the first quarter of each calendar year on the following aspects, among others: design modifications implemented or being implemented, the results of the environmental radiological surveillance programme and personnel dosimetry controls and the measures taken to analyse the applicability of new national nuclear safety and radiological protection standards and those generated in countries with disposal facilities of a similar design. In this last case, aspects relating to the tests and checks contributing to a better understanding of the long-term behaviour of radioactive wastes are considered to be of relevance.

The main activities involved in a design modification are as follows:

a) Definition of the modification requested, its justification and its description.

b) Preliminary analysis of the possible solution to be implemented and of its impact on the mandatory documents, such as for example whether a safety assessment will be required.

c) Preparation of the specifications, calculations, reports, etc. required for the definition and design of the modification and making up the design change package (DCP), which will allow the different structures, equipment or components required for the modification to be acquired.

d) The process of managing a modification is completed with the documentation provided by the different suppliers and the as-built edition of the project documentation, as well as the revision and updating of the documents of the facility.

The following are particularly significant among the design modifications undertaken in 2005, 2006 and 2007:

- ✓ Start-up at the El Cabril disposal facility of a new auxiliary conditioning building for the new waste treatments and conditioning systems, waste decontamination processes, waste decontamination processes and waste characterisation, acceptance and verification processes and as a temporary waste storage installation. This building is located inside the monitored zone, adjacent to the conditioning building, and has the same criteria as the existing building.
- ✓ Renovation of the control systems associated with the processes of the Main Control Room of the El Cabril LILW disposal facility, and distribution of the control room.
- ✓ Development of the complementary VLLW disposal installation, for the segregated disposal of this sub-category of wastes. Currently available are the design and construction of the first disposal vault and the design, construction and equipping of the "technology building" for the reception and pre-disposal conditioning of the waste units.

16.2.3. Engineering and technical support services

In accordance with the provisions of the RNRF, the Operating Regulation contains information on the rundown of job posts with nuclear responsibility and the organisation and functions of the personnel attached to the facility, defining the basic initial and on-going training programmes.

In the specific case of the El Cabril facility, the operating organisation is based on different organisational units that report to the Management of the Centre, the Director reporting in turn to

the ENRESA Operations Division, as reflected in the organisational flowchart included in Annex F of this report. General technical support is provided for the facility from headquarters, through the Departments of Safety and Licensing and LILW Engineering of the Operations Division. Furthermore, Project Engineering, contracted by the LILW Engineering Department, is in general responsible for the performance and revision of both the design and the technical validity of the modifications, in accordance with the requirements established by the ENRESA Project Manager.

The operation of the facility is the responsibility of the supervisors and operators holding licences granted by the CSN, and is regulated via a series of administrative procedures that establish the functions and responsibilities of each of the services among which the activities of the facility are divided, long with their relations and communications. There is also a medical service authorised to monitor the personnel professionally exposed to ionising radiations.

Depending on the functions assigned to each post, a training programme is drawn up annually, with the collaboration of the heads of the services. The objective of this training is the maintenance of basic knowledge in areas affecting radiological protection, emergencies and fire-fighting.

16.2.4. Waste characterisation and segregation

The first operating permit for El Cabril, issued in October 1992, established that the criteria for the acceptance of wastes at the facility should be approved by the regulatory authorities, due their constituting an official operating document. These criteria, with minor modifications introduced over time, remained in force until December 2004 and were applied to primary waste packages.

In December 2001, on completion of a characterisation campaign on the CE-2a container performed in accordance with the French Fundamental Safety Rule RFS-III.2, ENRESA submitted to the CSN a request for authorisation of a modification with revised acceptance criteria. These proposed that the criteria be applied to the disposal units, thus allowing credit to be given to the properties of the container, leaving the acceptance criteria for primary waste packages as the specification guaranteeing their quality, as agreed on between ENRESA and the producers.

In December 2004 the regulatory authorities approved this modification, this allowing the characteristics of the container to be used in the study of certain historic and non-conforming primary waste packages (non-compliance with the quality objectives in relation to mechanical resistance, confinement or resistance to thermal cycles). This has allowed for the following:

- ✓ Increase in the activity limit per primary waste package.
- ✓ Increase in the dose rate limit acceptable per primary waste package.
- ✓ Optimisation of certain lines of conditioning of packages with walls.

ENRESA also currently has an acceptance methodology for waste packages from nuclear facilities, compliance with which is part of the Operating Technical Specifications of the El Cabril disposal facility.

The management of wastes at the El Cabril disposal facility is designed to allow for the identification, tracking and control of all the waste packages at the facility and the updating of the inventory of activity stored in the cells, such that it may be contrasted at all times with the maximum radiological capacity (reference inventory).

ENRESA is authorised to perform necessary LILW tests and checks for characterisation and acceptance. The acceptance process controls are mainly process audits, production controls and

destructive and non-destructive technical verification tests, performed mainly at the laboratory of the El Cabril disposal facility. The objectives of these tests are as follows:

- ✓ Checking of activity values against those declared by the producer and tracking of scale factors for difficult to measure radionuclides.
- ✓ Compliance with the waste package properties associated with the generation methodology.
- ✓ Checking of chemical aspects of importance for safety in disposal (compatibility with the container, corrosion, etc.).
- ✓ Compliance with the quality-related objectives of the conditioned wastes.

16.2.5. Reporting of events

The El Cabril facility has a Site Emergency Plan. Emergency situations are classified in three categories, none of which contemplate the release of radioactive materials in a quantity such that it be necessary to adopt off-site protective measures. Consequently, no level of emergency of a degree of seriousness higher than the Site Emergency is defined.

In addition to the organisation for normal conditions, the Site Emergency Plan includes the activities and organisation for the operation of the facility in emergency situations requiring actions beyond the normal activities carried out. The basis of the emergency organisation is the operating organisation itself, although mechanisms have been established to guarantee the location of one of these persons at all times, in accordance with an internal procedure. Reporting to the CSN is contemplated in all cases.

Furthermore, El Cabril, like all other nuclear facilities, is subject to the reporting of events in application of the standards in force.

16.3. Assessment of compliance

In view of what has been set out in the previous sections, it may be concluded that the Spanish legislation reasonably ensures the adoption of measures by the licensees of the radioactive waste management facilities existing in the country in order to comply with the conditions of article 16 of the Convention.

The Spanish regulations require the licensees to draw up and submit a series of documents, along with the application for the operating permit for nuclear facilities, which contain a complete safety analysis and the performance of a programme of nuclear tests carried out under the supervision of the CSN and the MITYC. In addition, the limits and conditions relating to nuclear safety and radiological protection established by the CSN and to be adhered to by the licensee during the operating phase are attached to the permit as an annex.

As is provided in the Spanish regulations, the licensee of a nuclear facility is required to submit a study on dismantling and decommissioning forecasts in order to obtain the operating permit. Furthermore, the obligation of the licensee to analyse the applicability of new technologies or national requirements and of the standards on nuclear safety and radiological protection generated in countries with facilities of a similar design is also established.

Article 17
Institutional measures after closure

Article 17. Institutional measures after closure

Each Contracting Party shall take the appropriate steps to ensure that after closure of a disposal facility:

(i) records of the location, design and inventory of that facility required by the regulatory body are preserved;

(ii) active or passive institutional controls such as monitoring or access restrictions are carried out, if required; and

(iii) if, during any period of active institutional control, an unplanned release of radioactive materials into the environment is detected, intervention measures are implemented, if necessary.

17.1. Custody of documents

In accordance with R.D. 1349/2003, on the ordering of ENRESA's activities and their financing, this public company shall be responsible for permanently maintaining an archive of the inventory of wastes deposited at disposal facilities or of radioactive waste repositories. This custody shall apply even in the case of the facility in question having been decommissioned or closed.

17.2. Period of compliance following closure

The RNRF constitutes the reference regulatory framework for the dismantling and decommissioning of nuclear and radioactive facilities and, for the purposes of regulation and control, places first category radioactive facilities involved in the nuclear fuel cycle alongside nuclear facilities (Art. 37 RNRF).

In Spain, all the installations that have been decommissioned or are in the dismantling phase and that maintain conditioned and stabilised waste materials on their former site belong to the front end of the nuclear fuel cycle (mining tailings and process tailings from former uranium mills). Some of these facilities (storage installations or repositories) are currently in the so-called period of compliance, pending the declaration of decommissioning of the facility. Another is in the dismantling phase and, finally, one has obtained its declaration of decommissioning (for more information, refer to Section D of this report – inventories and lists).

The aforementioned regulation establishes that the process of dismantling of these installations should conclude with a declaration of decommissioning, freeing the licensees from their responsibilities as operators (Art. 12 f RNRF).

The period of compliance is a period prior to the declaration of decommissioning and allows for verification in the short term of the suitability of the waste conditioning performed and of the different engineered barriers implemented. During this period, the installation remains under the responsibility of the licensee and is subject to habitual regulatory control.

17.3. Institutional controls and future forecasts

The institutional controls imposed to restrict the use of sites at which stabilised radioactive wastes arising from the former facility remain in situ shall be contemplated specifically in the declaration of decommissioning issued (article 12 f RNRF).

The declaration of decommissioning shall define the limitations on use applicable to the site, as well as the entity or organisation responsible for the maintenance of such limitations and for monitoring compliance with them (Art. 12 f RNRF).

Section h) of article 2 of Royal Decree 1349/2003, on the ordering of ENRESA's activities and their financing, establishes that one of the functions of the company is to ensure the long-term management of all facilities serving for the storage or disposal of wastes.

Section g) of article 2 of Law 15/1980 creating the CSN, in accordance with the wording of reforming Law 33/2007, attributes to this organisation the function of controlling and monitoring the radiological quality of the environment throughout the entire national territory, in compliance with the international obligations of the Spanish State in this area, and without prejudice to the competences attributed to the different public administrations.

Article 25, "Fund for the financing of activities included in the general radioactive waste plan", of Royal Decree Law 5/2005, on urgent reforms to promote productivity and improve public contracting, modifies the sixth additional provision of the electricity industry act, Law 54/1997, establishing that the State shall take over the ownership of radioactive wastes once these have been definitively disposed of. It shall also undertake responsibility for whatever surveillance might be required following the decommissioning of a nuclear or radioactive facility, following the period established in the corresponding declaration of decommissioning.

The institutional controls that will be required in future declarations of decommissioning are not yet defined from the point of view of the organisations responsible for long-term control. It is expected that shared responsibilities will be assigned depending on the different objectives of the institutional controls imposed (physical protection, documentary records, etc.). To date, the only facility decommissioned that still has waste materials stored on site is the Lobo-G plant. In its declaration of decommissioning it is stated that until such time as the institutional party responsible for surveillance and control is named, the former licensee shall continue to be responsible.

As regards fuel cycle facilities decommissioned and without any restrictions of a radiological nature, and logically without radioactive wastes stored or deposited on site, the only institutional requirement established in their declarations of decommissioning is that the licensee maintains all documentation referring to the facility for at least five years. This includes information on both the operating lifetime of the facility and on dismantling activities.

17.4. Forecasts regarding possible remedial interventions

The possible remedial interventions at decommissioned facilities with radioactive waste stored or deposited on site should be contemplated in the declarations of decommissioning issued. For the reasons set out above, it is to be expected that the practical implementation of such remedial measures or actions will be assigned in the decommissioning declarations to those entities or organisations appointed as responsible for long-term control.

17.5. Assessment of compliance

To date only one facility has been decommissioned with radioactive wastes stored or deposited on site. Adequate measures have been taken to ensure compliance at this facility with the requirements of article 17. Likewise, it is expected that those facilities that are in the same circumstances and whose decommissioning is foreseen in the more or less near future will also comply with the requirements of the aforementioned article.

Section I

Transboundary movements

Section I. Transboundary movements

Article 27
Transboundary movement

Article 27. Transboundary movement

1. *Each Contracting Party involved in transboundary movement shall take the appropriate steps to ensure that such movement is undertaken in a manner consistent with the provisions of this Convention and relevant binding international instruments.*

   In so doing:

   (i) a Contracting Party which is a State of origin shall take the appropriate steps to ensure that transboundary movement is authorized and takes place only with the prior notification and consent of the State of destination;

   (ii) transboundary movement through States of transit shall be subject to those international obligations which are relevant to the particular modes of transport utilized;

   (iii) a Contracting Party which is a State of destination shall consent to a transboundary movement only if it has the administrative and technical capacity, as well as the regulatory structure, needed to manage the spent fuel or the radioactive waste in a manner consistent with this Convention;

   (iv) a Contracting Party which is a State of origin shall authorize a transboundary movement only if it can satisfy itself in accordance with the consent of the State of destination that the requirements of subparagraph (iii) are met prior to transboundary movement;

   (v) a Contracting Party which is a State of origin shall take the appropriate steps to permit re-entry into its territory, if a transboundary movement is not or cannot be completed in conformity with this Article, unless an alternative safe arrangement can be made.

2. *A Contracting Party shall not licence the shipment of its spent fuel or radioactive waste to a destination south of latitude 60 degrees South for storage or disposal.*

3. *Nothing in this Convention prejudices or affects:*

   (i) the exercise, by ships and aircraft of all States, of maritime, river and air navigation rights and freedoms, as provided for in international law;

(ii) rights of a Contracting Party to which radioactive waste is exported for processing to return, or provide for the return of, the radioactive waste and other products after treatment to the State of origin;

(iii) the right of a Contracting Party to export its spent fuel for reprocessing;

(iv) rights of a Contracting Party to which spent fuel is exported for reprocessing to return, or provide for the return of, radioactive waste and other products resulting from reprocessing operations to the State of origin.

27.1. Legal development

As has been described in article 19.1, Council Directive 2006/117/EURATOM, of November 20th 2006, establishes the community system for the surveillance and control of cross-border transfers of radioactive waste and spent fuel.

As regards the transport of radioactive waste and spent fuel, and as pointed out in previous reports, Spain has included in its internal standards a series of international updates and amendments referring to the transport of hazardous goods by air, sea, rail and road, specifically those referring to the following:

- ✓ European Agreement on the International Transport of Hazardous Goods by Road (ADR) 2007.
- ✓ Regulation on the International Transport of Hazardous Goods by Rail (RID) 2007.
- ✓ International Maritime Code on Hazardous Goods (IMDG Code) 2006.
- ✓ Technical Instructions for the Air Transport without risk of Hazardous Goods (OACI) 2006.

Furthermore, and as regards the transport of hazardous goods by road, Royal Decree 551/2006, of May 5th 2006 was approved, replacing a previous decree and regulating the road transport of hazardous goods within the Spanish territory. Both this Royal Decree and the one corresponding to rail transport will need to be revised in the near future to adapt them to the aforementioned revisions of the ADR and RID.

27.2. Spanish experience

The Spanish experience of transboundary movements during the period considered has consisted of transfers of low and intermediate level radioactive wastes, with Spain being the destination. Specifically, radioactive wastes from the decontamination of the hydraulic reactor coolant pump circuit of Spanish nuclear power plants have been received.

Furthermore, in 2007 two irradiated fuel rods were sent from Almaraz nuclear power plant to the SCK.CEN research centre in Mol, Belgium, within the framework of a research programme for characterisation of the fuel to be carried out by FRAMATOME, to which ownership was transferred. The transport operation was carried out in compliance with all the obligations established in the national and international standards on the transport of hazardous goods and the physical protection of nuclear materials.

27.3. Assessment of compliance

During the period of the report, Spain has kept updated its internal standards on the transboundary movement and international transport of spent fuel and radioactive wastes, in accordance with its own experience and with the changes made in the European Community and in-

ternational standards. Likewise, all the cross-border movements that have taken place have been subject to the requirements established in the standards, as a result of which it is concluded that the obligations of this article of the Convention have been satisfactorily fulfilled.

Section J

Disused sealed sources

Section J. Disused sealed sources

Article 28
Disused sealed sources

Article 28. Disused sealed sources

1. *Each Contracting Party shall, in the framework of its national law, take the appropriate steps to ensure that the possession, remanufacturing or disposal of disused sealed sources takes place in a safe manner.*
2. *A Contracting Party shall allow for reentry into its territory of disused sealed sources if, in the framework of its national law, it has accepted that they be returned to a manufacturer qualified to receive and possess the disused sealed sources.*

28.1. Measures to ensure safe possession, re-elaboration or disposal

Article 31 of the Nuclear Energy Act, Law 25/1964, establishes that radioactive materials may not be used or stored within the national territory by persons not expressly authorised to do so, and indicates that the same requirements shall be demanded for transfer or resale.

This legal requirement is developed in the Regulation on Nuclear and Radioactive Facilities (RNRF). Article 36 of this regulation establishes that radioactive facilities having scientific, medical, agricultural, commercial or industrial purposes shall require an operating permit, a declaration of decommissioning and, where appropriate, an authorisation for modification and change of ownership.

Article 34 of the aforementioned regulation provides that radioactive facilities shall be those installations of any type that contain a source of ionising radiations, along with those premises, laboratories, factories and installations at which radioactive materials are produced, used, possessed, treated, handled or stored. Article 35 of the RNRF establishes that installations meeting certain conditions described therein shall not be considered radioactive facilities, defining levels of exemption based on isotopic activity and isotopic activity per unit of mass. The levels of exemption are established via Nuclear Safety Council instruction IS-05.

Likewise, the RNRF establishes the conditions for exemption from classification as radioactive facilities applicable to certain apparatus (consumer goods) incorporating radioactive substances or generating ionising radiations. In this case the Regulation establishes a system for the approval of types of radioactive apparatus by the Ministry of Industry, Tourism and Trade, follow-

ing a report by the Nuclear Safety Council (CSN) in which the conditions for their disposal shall be established.

These requirements are applicable regardless of whether the radioactive sources or materials are new or are depleted or out of use.

Consequently, in Spain the possession or re-elaboration of any radioactive source or material requires that an administrative authorisation be obtained. Within the licensing process to be adhered to by the licensee in order to obtain such authorisation, it is necessary for the CSN to issue a mandatory report on safety and radiological protection after having verified that the licensee will perform all the operations in compliance with the applicable safety and radiological protection standards and requirements. The corresponding authorisations, issued by the competent authorities, are accompanied by applicable limits and conditions relating to safety and radiological protection.

Among the documentation to be submitted by the licensees to obtain these authorisations is a document on forecasts for the decommissioning of the facility, in which they are required to report on forecasts for the safe management of disused sources, including the economic coverage foreseen for this purpose.

Whenever it encounters situations of radioactive sources or equipment no longer in use, the CSN, in application of its functions of inspecting and controlling authorised facilities, urges the licensees to have such sources or equipment removed via the channels contemplated in the regulations and supervises the performance of these activities.

As regards the final disposal of disused radioactive sources, the provisions adopted in Spain are diverse and depend on the different situations that might arise.

In the case of radioactive sources for which the licensee has obtained authorisation as a radioactive facility, entitling him to possess and use such items in accordance with the safety and radiological protection limits and conditions accompanying such authorisation, the licensee is obliged to return the disused radioactive sources to the supplier or, if this were not possible, to manage them via the Empresa Nacional de Residuos Radiactivos (ENRESA).

In Spain there are no facilities for the manufacturing or production of sealed radioactive sources, as a result of which all sources are imported from other countries. The importing of radioactive sources is also subject to a system of authorisation in accordance with article 74 of the RNRF, except when the sources come from a European Union member country, in which case a system of notification of transfers to the authorities of the receiving country and acceptance by them, as established in Regulation 1493/1993/EURATOM, is applied.

When the entity that is going to import radioactive sources is authorised as a radioactive facility, the authorisation also entitles it to undertake such imports (single authorisation). The limits and conditions that accompany such authorisations establish the obligation for all entities importing radioactive sources from other countries to draw up agreements with the overseas suppliers for the return of these sources to the country of origin at the end of their service lifetime.

There are situations in which the holder of an authorisation for the possession and use of radioactive sources cannot return them to the supplier at the end of their service lifetime (for example because the supplier is no longer in business). In these cases the limits and conditions of the authorisations establish that the licensee should contact ENRESA for the latter to undertake removal and management as a radioactive waste. In such cases, ENRESA, on the basis of the standards regulating its activity, is responsible for managing the radioactive sources and for providing a final destination for them in accordance with the applicable regulations, depositing them at the authorised low and intermediate level waste disposal facility in Sierra Albarrana (El Cabril) or taking appropriate measures for their final management.

In the case of disused radioactive sources outside the regulatory control system (old or orphan sources), in other words when there is no licensee authorised to possess them, the two aforementioned possibilities are also contemplated. If it is possible to identify the supplier of the source, the person in possession of it makes the arrangements necessary for it to be removed; if this is not feasible, the owner of the source contacts ENRESA. In accordance with article 74 of the Regulation on Nuclear and Radioactive Facilities, the removal by ENRESA of unauthorised disused sources requires a specific authorisation for transfer issued by the Ministry of Industry, Tourism and Trade, following a report by the CSN.

A special case in relation to orphan sources is that of sources detected at metallic scrap processing or recovery facilities. The actions to be taken to ensure the safe management of such sources are contemplated in a Protocol subscribed by the companies in this sector, the Ministry of Economy, the CSN, ENRESA and the trade union organisations. This protocol establishes that the licensee of the industry in which the source is detected shall be obliged to set up technical and administrative systems to isolate the source, identify the radioactive isotope in question and its activity and keep it under safe conditions pending removal. This protocol establishes that when the radioactive source is of national origin it will be managed as a radioactive waste by ENRESA, the latter accepting the costs. In other cases, the sources shall be returned to the supplier of the scrap or, if this were not feasible, shall be transferred to ENRESA for management as radioactive waste, in which case the cost shall be to the companies, without prejudice to their possible passing it on to the supplier or shipper of the scrap.

Another special case is that of the needles of Ra-226 for medical use that were utilised in Spain before the developments of the standards regulating authorisations for the possession and use of radioactive sources and materials. These sources have not been used for many years and have been the subject of specific campaigns for recovery, removal and management by ENRESA. The costs of such management have been applied to the ENRESA fund, with no cost for the holders. At present very few batches of needles of Ra-226 continue to appear; when they do, they are managed as indicated above.

The safe possession, use, transfer and final disposal of radioactive sources in all the cases dealt with in the previous paragraphs are guaranteed, since the different entities participating in these processes are obliged to fulfil the requirements of the Regulation on Protection of Health against Ionising Radiations. This Spanish standard includes requirements on safety and radiological protection equivalent to those contained in the International Standards on Radiological Protection and the Safety of Radiation Sources of the International Atomic Energy Agency (IAEA) and in the European Union Directive 96/29/EURATOM.

In December 2003, the Council of the European Union approved Directive 122/2003/EURATOM on the control of high activity sealed sources and orphan sources. This directive has been transposed to the Spanish national standards by Royal Decree 229/2006, of February 24th, on the control of high activity encapsulated radioactive sources and orphan sources. This new standard includes specific requirements on the control of sources and the management of disused sources.

Article 5 indicates that, before completing the arrangements for authorisation prior to the start-up of a radioactive facility whose authorisation includes a source, the possessors of sources should reach appropriate agreements with the supplier for the return of the source when it becomes a disused source and establish a financial guarantee to cover safe management at that time, even in the event of insolvency, interruption of business or any other contingency possible affecting the owner of such sources.

Article 7 of this same standard establishes the obligation of owners of sources to keep a sheet with an inventory of each of the sources under their responsibility, including their location and transfers, and to send a copy to the Nuclear Safety Council and the Ministry of Industry, Tourism and Trade. They are also required to provide a copy of this sheet specifically in the event of any change in location or, where appropriate, in the habitual storage of the source. Likewise, on closure of the inventory sheet of a given source, they shall immediately communicate the identification of the new owner or of the recognised facility to which the source is transferred.

As an additional measure this article requires the Nuclear Safety Council to maintain an updated national inventory of authorised owners and of the sources they possess.

Article 8 of this standard requires the owner to return any disused sources to the supplier, for which the appropriate agreements should be reached previously, or to transfer such sources to another authorised owner or to a recognised facility without unjustified delay once they have ceased to be used.

Finally, this new standard includes requirements relating to the identification and marking of sources, personnel training and surveillance measures to detect the appearance of orphan sources and for their subsequent management, including the establishment of a financial guarantee to cover the costs involved.

Likewise, in accordance with Royal Decree 229/2006, of February 24th, on the control of high activity encapsulated radioactive sources and orphan sources, the MITYC is promoting a campaign at national level for the search for and recovery and management of orphan radioactive sources. Initially this campaign has been scheduled for the period 2007 to 2008. The MITYC has commissioned ENRESA to perform this campaign under the supervision and control of the CSN and of the MITYC itself.

In the wake of the authorisation issued to ENRESA, following a mandatory report by the CSN, for the management of this type of sources, the first have been removed, the majority coming from hospitals, research centres, faculties, university colleges, other educational centres and private individuals.

In April 2004, Spain informed the Director General of the IAEA of its commitment to apply the Code of Conduct for the Technological Safety and Security of Radiation Sources, this in fact reinforcing the measures applied to maintain efficient control over radiation sources from manufacturing to final disposal at an authorised facility. These measures are included in the national regulations on safety, radiological protection, radioactive waste management, transport and the control of radioactive sources.

Furthermore, the CSN adheres to the recommendations of the Guide on the importing and exporting of radioactive sources published by the IAEA in development of the aforementioned Code of Conduct, and has appointed a national contact for the exchange of requests for consent for the transfer of sources and notifications of their dispatch.

28.2. Readmission into Spain of disused sealed sources

As has been pointed out above, at present there are no facilities in Spain for the manufacturing or production of sealed radioactive sources. Nevertheless, there is no provision in the Spanish standards that prevents the readmission into the country of radioactive sources exported by Spanish manufacturers.

The authorisation for Spanish licensees to import sealed radioactive sources from other countries requires that these licensees adhere to the provisions of this article, accepting the return of disused sources to suppliers or manufacturers authorised in their national territory.

28.3. Assessment of compliance

In accordance with what has been set out in the previous sections, the legal and regulatory provisions in force in Spain ensure the adequate control of sealed sources, both in use during their service lifetime at radioactive facilities and in final disposal once they become disused.

Likewise, although radioactive sources are not manufactured or produced in Spain, the legal and regulatory provisions in force do not prevent the readmission into the country of whatever radioactive sources might be exported by Spanish manufacturers.

Section K

Activities planned to improve safety

Section K. Activities planned to improve safety

This Third National Report has described the situation existing in Spain in relation to the management of spent fuel and radioactive wastes within the context of the requirements established in the Joint Convention. In view of the information provided in dealing with each article and of the assessment of compliance, it may generally be stated that the Spanish system continues to fulfil the requirements of the Convention.

Nevertheless, taking into account the very nature of the safe management of radioactive wastes and spent fuel, work continues on improving the legal and regulatory framework and in the areas indicated below, in which improvements are expected to be achieved in the short and medium term.

K.1. Legal developments in relation to safety in the management of spent fuel and radioactive wastes

As has been pointed out throughout this report, the areas in which work will continue with a view to completing the legal and regulatory framework governing the long-term management of spent fuel and radioactive wastes are as follows:

- ✓ Updating of the national regulations on the surveillance and control of transfers of radioactive wastes and spent nuclear fuel, which will transpose to the Spanish legal system the Council Directive 2006/117/EURATOM, of November 20th 2006, on the surveillance and control of transfers of radioactive wastes and spent nuclear fuel, replacing the previous Council Directive 92/3/EURATOM in this area.

  The greatest novelty is that the transfers of spent fuel will be regulated, which were not included in the previous Directive 92/3/EURATOM when the fuel was destined for reprocessing, since from the point of view of nuclear safety and radiological protection this was not considered to be coherent with the treatment given to other radioactive materials.

- ✓ Issuing of a Council Instruction on temporary storage facilities for spent fuel and of another relating to the safety requirements applicable to spent fuel storage casks.

K.2. Construction of a Centralised Temporary Storage (CTS) facility

The construction of a centralised temporary storage facility to house the spent fuel from the nuclear power plants and the long-lived radioactive wastes that cannot be sent to the Sierra Albarrana solid radioactive waste disposal facility (El Cabril) constitutes a fundamental objec-

tive within the national strategy for the management of such materials. At present the data contemplated for the construction of this facility is around the year 2012.

It is foreseen that a public call be initiated to allow those municipal areas that might be interested in hosting this facility, along with its associated technology centre, to present their candidatures. The next step will be a proposal to the Government regarding those sites that fulfil the established criteria, followed finally by the selection of the site by the Government.

The process of appointing the site to house the CTS facility will use as a reference the criteria provided by the COWAM project within the EU's Sixth Framework Programme. The objective of this project is to draw up a methodology for decision-making in agreement with all the social stakeholders, such that it might be applied in any case in which social acceptance were required, such as the siting of infrastructures implying difficulties as regards acceptance by the members of the public. The aim is to achieve a process of participation in agreement with the Autonomous Communities affected.

K.3. Measures deriving from the recommendations of the IRRS mission

In January 2008 the CSN was host to a full-scope IRRS mission organised by the IAEA. Once the definitive report is received, the CSN will study the recommendations and suggestions resulting from the review and establish an action plan to respond to them. Analogously, other institutions involved in the scope of the mission will assess whether it is necessary to implement actions as a result of the conclusions of the mission.

SECTION L

Annexes

SECTION L. Annexes

ANNEX A

INTERNAL LEGAL STANDARDS IN THE AREA OF NUCLEAR ENERGY AND RADIOACTIVE WASTES

1. STANDARDS OF LEGAL STANDING

- ✓ Nuclear Energy Act (Law 25/1964 of April 29th; NEA; Official State Gazette 04.05.1964). This law has been modified by the following:
  - ➪ Law 25/1968, of June 20th, modifying articles 9 and 16 of Law 25/1964.
  - ➪ Law 15/1980, of April 22nd, creating the Nuclear Safety Council.
  - ➪ Law 21/1990, of December 19th, to adapt Spanish law to directive 88/357/CEE.
  - ➪ Constitutional Law 10/1995, of November 23rd, on the penal code.
  - ➪ Electricity Industry Act, Law 54/1997, of November 27th.
  - ➪ Law 14/1999, of May 4th, on tariffs and public prices for services rendered by the CSN.
  - ➪ Law 62/2003, of December 30th, on fiscal, administrative and social order measures.
  - ➪ Law 24/2005, of November 18th, on reforms to promote productivity.
  - ➪ Law 17/2007, of July 4th, modifying Law 54/1997.
  - ➪ Law 33/2007, of November 7th, reforming Law 15/1980.
- ✓ Law creating the Nuclear Safety Council (Law 15/1980, of April 22nd; Official State Gazette 25.04.1980). This law has been modified by the following:
  - ➪ Hydrocarbon Sector Act, Law 34/1998, of October 7th.
  - ➪ Law 14/1999, of May 4th, on tariffs and public prices for services rendered by the CSN.
  - ➪ Law 62/2003, of December 30th, on fiscal, administrative and social order measures.
  - ➪ Law 24/2005, of November 18th, on reforms to promote productivity.
  - ➪ Law 33/2007, of November 7th, reforming Law 15/1980.
- ✓ Law on tariffs and public prices for services rendered by the Nuclear Safety Council (Law 14/1999, of May 4th; Official State Gazette 05.05.1999)
- ✓ Electricity Industry Act (Law 54/1997, of November 27th; Official State Gazette 28.11.1997 and 31.12.2001). This law has been modified by the following:
  - ➪ Royal Decree Law 5/2005, of March 11th, on urgent reforms to promote productivity and improve public contracting.
  - ➪ Law 24/2005, of November 18th, on reforms to promote productivity.

- Law 33/2007, of November 7th, reforming Law 15/1980.

✓ Law 9/2006, of April 28th, on assessment of the effects of certain plans and programmes on the environment. This law has been modified by the following:

- Royal Legislative Decree 1/2008, of January 11th, approving the reworded text of the Law on the assessment of the environmental impact of projects.

✓ Law 27/2006 (Aarhus Law), of July 18th, regulating rights to access information, public participation and justice in environmental matters. This law has been modified by the following:

- Royal Legislative Decree 1/2008, of January 11th, approving the reworded text of the Law on the assessment of the environmental impact of projects.

✓ Law 12/2006, of December 27th, on complementary fiscal items in the Budget of the Autonomous Community of Andalusia.

2. STANDARDS OF REGULATORY STANDING

1. Regulation on Nuclear and Radioactive Facilities. (Royal Decree 1836/1999, of December 3rd; Official State Gazette 31.12.1999). This Regulation was modified by the following:
   - R.D. 35/2008, of January 18th, modifying the Regulation on Nuclear and Radioactive Facilities.
2. Regulation on the Protection of Health against Ionising Radiations. (Royal Decree 783/2001, of July 6th; Official State Gazette 26.06.2001).
3. Royal Decree 1157/1982, pf April 30th, approving the Charter of the CSN (Official State Gazette 07.06.1982).
4. Royal Decree 229/2006, of February 24th, on the control of high activity encapsulated radioactive sources and orphan sources (Official State Gazette 28.02.2006).
5. Royal Decree 775/2006, of June 23rd, creating the interministerial Commission for the establishment of criteria to be met by the site of the centralised temporary storage facility for spent nuclear fuel and high level wastes, and associated technology centre (Official State Gazette 05.07.2006).
6. Royal Decree 413/1997, of March 21st, on the Radiological Protection of external workers running a risk of exposure to ionising radiations as a result of interventions in the controlled zone (Official State Gazette 16.04.1997).
7. Royal Decree 158/1995, of February 3rd, on the Security of Nuclear Materials (Official State Gazette 04.03.1995).
8. Royal Decree 1464/1999, of September 17th, on activities in the front end of the nuclear fuel cycle (Official State Gazette 05.10.1999).
9. Royal Decree 1349/2003, of October 31st, on the ordering of the activities of the Empresa Nacional de Residuos Radiactivos, S. A. (ENRESA) and their financing (Official State Gazette 08.11.2003)
10. Royal Decree 1767/2007, of December 28th, determining the values to be applied in 2008 for the financing of the costs of radioactive waste and spent fuel management and the dismantling and decommissioning of facilities.

11. Royal Decree 1546/2004, of June 25th, approving the basic Nuclear Emergency Plan (PLABEN; Official State Gazette 14.07.2004).
12. Regulation on the coverage of nuclear risk (Decree 2177/1967, of July 22nd; Official State Gazette 18.09.1967). This Regulation was modified by the following:
    - ➪ Decree 742/1968, of March 28th, modifying article 66 of the Regulation.
13. Decree 2864/1968, of November 7th, on establishment of the coverage required for civil liability in relation to nuclear risk.
14. Regulation on the assessment of environmental impact (Royal Decree 1131/1988, of September 30th Official State Gazette 05.10.1998).
15. Royal Decree 208/2005, of February 25th, on electrical and electronic apparatus and waste management (Official State Gazette 26.02.2005).
16. Royal Decree 1428/1986, of June 30th, on radioactive lightning rods (Official State Gazette 11.07.1986). This Royal Decree was modified by the following:
    - ➪ Royal Decree 903/1987, of July 10th (Official State Gazette 11.07.1987).
17. Royal Decree 2088/1994, of October 20th, on the surveillance and control of shipments of radioactive waste between member States and into and out of the Community (Official State Gazette 26.11.1994).
18. Royal Decree 551/2006, of May 5th, regulating the transport of hazardous goods by road in the Spanish territory (Official State Gazette 12.05.2006).
19. Royal Decree 412/2001, of April 20th, regulating various aspects relating to the transport of hazardous goods by rail (Official State Gazette 08.05.2001).
20. Royal Decree 1749/1984, of August 1st, approving the National Regulation on the transport of hazardous goods by air (Official State Gazette 02.10.1984), modified by Ministerial Order on 28/12/1990.
21. National Regulation on the admission, handling and storage of hazardous goods at ports (Official State Gazette 13/02/1989).

3. Council instructions

- ✓ Nuclear Safety Council Instruction IS-01, of May 31st 2001, defining the format and content of the individual radiological monitoring document (radiological passbook) regulated in Royal Decree 413/1997 (Official State Gazette of August 6th 2001)
- ✓ Nuclear Safety Council Instruction IS-02 revision 1, on the documentation of refuelling activities at light water reactor nuclear power plants (Official State Gazette of September 16th 2004). (translated into English).
- ✓ Nuclear Safety Council Instruction IS-03, of November 6th 2002, on qualifications to obtain recognition as an expert on protection against ionising radiations (Official State Gazette of December 12th 2002).
- ✓ Nuclear Safety Council Instruction IS-04, of February 5th 2003, regulating the transfer, filing and custody of documents corresponding to the radiological protection of the workers, public and the environment prior to the transfer of ownership of practices at nuclear power plants for dismantling and decommissioning (Official State Gazette of February 28th 2003).

- ✓ Nuclear Safety Council Instruction IS-05, of February 26th 2003, defining exemption values for nuclides as established in tables A an B of annex I of Royal Decree 1836/1999 (Official State Gazette of April 10th 2003.).
- ✓ Nuclear Safety Council Instruction IS-06, of April 9th 2003, defining the training programmes on basic and specific radiological protection regulated in Royal Decree 443/1997, of March 21st, in the area of nuclear facilities and fuel cycle radioactive facilities (Official State Gazette of June 3rd 2003). On October 28th 2004, the CSN issued a circular to all external companies clarifying certain aspects of the practical application of this instruction.
- ✓ Nuclear Safety Council Instruction IS-07, of June 22nd 2005, on fields of application of personnel licences for radioactive facilities (Official State Gazette of July 20th 2005).
- ✓ Nuclear Safety Council Instruction IS-08, of July 27th 2005, on the criteria applied by the Nuclear Safety Council to require specific advisory services on radiological protection from the licensees of nuclear and radioactive facilities (Official State Gazette of October 5th 2005).
- ✓ Nuclear Safety Council Instruction IS-09, of June 14th 2006, establishing the criteria to be adhered to by systems, services and procedures for the physical protection of nuclear facilities and materials (Official State Gazette of July 7th 2006).
- ✓ Nuclear Safety Council Instruction IS-10, of July 25th 2006, establishing criteria for the reporting of events to the Council by nuclear power plants (Official State Gazette of November 3rd 2006).
- ✓ Nuclear Safety Council Instruction IS-11, of February 21st 2007, on personnel licences for the operation of nuclear power plants (Official State Gazette of April 26th 2007).
- ✓ Nuclear Safety Council Instruction IS-12, of February 28th 2007, on the training of non-licensed personnel at nuclear power plants (Official State Gazette of May 11th 2007).
- ✓ Nuclear Safety Council Instruction IS-13, of March 21st 2007, on radiological criteria for the release of nuclear power plant sites (Official State Gazette of May 7th 2007).
- ✓ Nuclear Safety Council Instruction IS-14, of October 24th 2007, on resident CSN inspectors at nuclear power plants (Official State Gazette of November 8th 2007).
- ✓ · Nuclear Safety Council Instruction IS-15, of October 31st 2007, on requirements for monitoring of the efficiency of maintenance activities at nuclear power plants (Official State Gazette of November 23rd 2007).
- ✓ Nuclear Safety Council Instruction IS-16, of January 23rd 2008, regulating the periods of time during which the documents and records of radioactive facilities should be kept in the archive (Official State Gazette of February 12th 2008).
- ✓ Nuclear Safety Council Instruction IS-17, of January 30th 2008, on the homologation of training courses or programmes for personnel operating or directing the operation of equipment at X-ray facilities for medical diagnosis and accreditation of the personnel of such facilities (Official State Gazette of February 19th 2008).
- ✓ Nuclear Safety Council Instruction IS-18, of April 2nd 2008, on the criteria applied by the Nuclear Safety Council in requiring the licensees of radioactive facilities to report on radiological events or incidents (Official State Gazette of April 16th 2008).

4. CSN SAFETY GUIDES

- ✓ GSG-1.01. Qualifications for the acquisition and use of nuclear power plant operating personnel licences. CSN, 1986.
- ✓ GSG-1.02. Nuclear emergency dosimetry model. CSN, 1990.
- ✓ GSG-1.03. Nuclear power plant emergency plan. CSN, 1987. Rev. 1, 2007.
- ✓ GSG-1.04. Radiological control and surveillance of liquid and gaseous radioactive effluents released by nuclear power plants. CSN, 1988.
- ✓ GSG-1.05. Documentation on refuelling activities at light water reactor nuclear power plants. CSN, 1990. Rev. 1, 2004.
- ✓ GSG-1.06. Reportable events at operating nuclear power plants. CSN, 1990.
- ✓ GSG-1.07. Information on nuclear power plant operation to be submitted to the CSN by the licensees. CSN, 1997.
- ✓ GSG-1.09. Emergency drills and exercises at nuclear power plants. CSN, 1996 (Rev. 1, 2006).
- ✓ GSG-1.10. Periodic safety reviews at nuclear power plants. CSN, 1996.
- ✓ GSG-1.11. Design modifications at nuclear power plants. CSN, 2002.
- ✓ GSG-1.12. Practical application of the optimisation of radiological protection in nuclear power plant operation. CSN, 1999.
- ✓ GSG-1.13. Contents of nuclear power plant operating regulations. CSN, 2000.
- ✓ GSG-1.14. Criteria for the performance of Probabilistic Safety Assessment applications. CSN, 2001.
- ✓ GSG-1.15. Probabilistic Safety Assessment updating and maintenance. CSN, 2004.
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- ✓ GSG-1.17. Application of risk-informed techniques for the in-service inspection (ISI) of piping. CSN, 2007.
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ANNEX B

NUCLEAR AND RADIOACTIVE FACILITIES LICENSING PROCESS

The process of licensing both nuclear and radioactive facilities is governed by the Regulation on Nuclear and Radioactive Facilities (RNRF), approved by Royal Decree 1836/1999, of December 3rd, and modified by Royal Decree 35/2008, of January 18th.

According to the RINR, these authorisations are granted by the Ministry of Industry, Tourism and Trade (MITYC), to which the corresponding requests should be addressed, along with the documentation required in each case. The MITYC sends a copy of each request and accompanying documentation to the Nuclear Safety Council (CSN) for its mandatory report.

The CSN reports are mandatory and binding, both when negative or withholding in nature with respect to the request and, when positive, as regards the conditions established.

Where appropriate the MITYC will send a copy of all the documentation to those Autonomous Communities that have competences in relation to land planning and the environment and in whose territory is located the facility or the planning area contemplated in the basic standards on planning for nuclear and radiological emergencies for them to submit their allegations within a period of one month.

On receiving the report from the CSN, and following whatever decisions, further reports or allegations might be required in each case, the MITYC will adopt the appropriate resolution.

1. SYSTEM FOR THE LICENSING OF NUCLEAR FACILITIES

According to the definitions included in the RNRF, the following are nuclear facilities:

1. Nuclear power plants
2. Nuclear reactors
3. Manufacturing facilities using nuclear fuels to produce nuclear substances and those at which nuclear substances are treated.
4. Facilities for the permanent storage of nuclear substances
5. Devices or facilities using nuclear fusion or fission reactions to produce energy or with a view to producing or developing new energy sources.

In compliance with the RNRF, the nuclear facilities require different permits or administrative authorisations for their operation, these being the preliminary or site authorisation, the construction permit, the operating permit, the authorisation for modification and the dismantling permit. The procedure for the awarding of each of these authorisations is regulated by the Regulation itself and is briefly described below.

Preliminary authorisation

The preliminary or site authorisation constitutes official recognition of the objective proposed and of the suitability of the site selected. Awarding of this authorisation allows the licensee to initiate works on the preliminary infrastructures authorised and to request the construction permit for the facility.

Requests for preliminary authorisations are required to be accompanied by the following documents:

a) Declaration of the needs to be covered and justification of the facility and of the site selected

b) Descriptive report on the fundamental elements making up the facility, along with basic information on the said installation

c) Preliminary construction project, including the phases and schedule for performance and a preliminary economic study of the financial investments and costs foreseen

d) Study on characterisation of the site and of the area of influence of the facility

e) Organisation foreseen for supervision of the project and quality assurance during construction

f) Description of the activities and preliminary infrastructure works to be performed

As part of the process of dealing with such requests, a period of public information is opened, this being described in detail in point 3 of this Annex.

Construction permit

This empowers the licensee to initiate the construction of the facility and to request the operating permit.

This request should be accompanied by the following documentation:

a) General design of the facility

b) Procurement schedule

c) Budget, financing and performance schedule and framework for technical collaboration

d) Economic study updating the one submitted with the preliminary request

e) Preliminary safety analysis, which in turn should include the following:

1) Description of the site and surrounding area

2) Description of the facility

3) Analysis of foreseeable accidents and their consequences

4) Radiological analysis study

5) Update on the organisation foreseen by the requesting party for supervision of project performance and quality assurance during construction

6) Organisation foreseen for future operation of the facility and preliminary operating personnel training programme

7) Pre-operational radiological environmental surveillance programme

8) Quality assurance programme for construction

f) Technological, economic and financing forecasts for dismantling and decommissioning

g) Administrative awards and authorisations to be granted by other Ministries and public Administrations or documents accrediting their request in compliance with all the necessary requirements

During the construction and assembly of a nuclear facility, and prior to loading of the fuel or the acceptance of nuclear substances at the facility, the licensee of the authorisation is obliged to undertake a programme of pre-nuclear tests accrediting the adequate performance of the equipment or parts making up the installation, in relation both to nuclear safety and radiation protection and to the applicable industrial and technical standards.

The pre-nuclear testing programme will be proposed by the licensee of the authorisation and will require the approval of the Directorate General for Energy Policy and Mines, following a report from the CSN.

The results of the pre-nuclear testing programme will be submitted to the Directorate General for Energy Policy and Mines and to the CSN for analysis before the operating permit may be granted.

Operating permit

This permit allows the licensee to load the nuclear fuel or introduce nuclear substances into the facility, to carry out the programme of nuclear tests and to operate the facility within the set of conditions established in the authorisation. This permit is first granted provisionally until the nuclear tests have been satisfactorily completed.

a) Safety study: this must contain sufficient information for performance of an analysis of the facility from the point of view of nuclear safety and radiological protection, and must refer to the following issues:

   1) Complementary data on the site and its characteristics obtained during construction

   2) Description of the facility and of the processes that will take place in it

   3) Analysis of foreseeable accidents and of their consequences

   4) Analytical radiological study of the facility

   5) Operational radiological environmental surveillance programme.

b) Operating regulation: This should contain the following information:

   1) List of job posts entailing nuclear responsibility

   2) Organisation and functioning of the personnel, and a description of the safety management system implemented.

   3) Operating standards under normal and accident conditions. Operating technical specifications (OTS's): These shall include the limit values for variables affecting safety and the minimum operating conditions.

c) Site emergency plan: This shall detail the measures foreseen by the licensee and the assignment of responsibilities to address accident conditions

d) Nuclear testing programme: This shall describe the tests, their objectives, the specific techniques to be used and the results expected.

e) Quality assurance manual: This shall establish the scope and content of the quality programme applicable to safety-related systems, structures and components.

f) Radiological protection manual: This shall include the facility's radiological protection standards.

g) Radioactive waste management plan: This shall include a system for the possible declassification of such wastes.

h) Final economic study: This shall analyse compliance with the economic and financial forecasts and establish the full and effective cost of the facility.

i) Dismantling and decommissioning forecasts: This shall establish the final disposal arrangements foreseen for the wastes generated and include a study of the cost and economic and financial forecasts to guarantee decommissioning.

j) Physical protection plan: This shall describe the measures to be adopted in order to achieve an acceptable level of security. This will be dealt with confidentially.

On completion of the nuclear testing programme, the licensee shall submit the results to the Directorate General for Energy Policy and Mines and to the CSN, along with a proposal for modifications to the OTS's if these were advisable in view of the tests performed.

The CSN will issue a report to the MITYC on the results of the tests and the modifications to be made, where appropriate, and on the conditions of the operating permit for the time period established. The MITYC will then issue the operating permit for the corresponding period.

Authorisation for modification

The RNRF establishes that all modifications to the design or to the operating conditions that affect the nuclear safety or radiological protection of the facility, as well as the performance of tests at the facility, should be previously analysed by the licensee in order to verify that the criteria, standards and conditions on which the authorisation is based continue to be fulfilled. If, as a result of such analyses, the licensee were to conclude that the aforementioned requirements continue to be met, he may carry out the modifications, periodically reporting to the competent regulatory authorities. If, on the contrary, the design modification implies a change in the criteria, standards and conditions on which the operating permit is based, the licensee shall be required to request an authorisation for it, which must necessarily be issued to him before the modification enters into service or tests are performed. Regardless of the aforementioned modification, whenever in the judgment of the regulatory authorities the modification is major in its scope or implies significant construction or assembly works, the licensee is required to request authorisation for the performance and assembly of the modification, this authorisation to be obtained before initiating assembly or construction activities in relation to this type of modifications.

The request for the modification authorisation should be accompanied by the following documentation:

a) Technical description of the modification

b) Safety assessment

c) Identification of the documents that would be affected by the modification

d) Identification of the tests to be performed prior to re-initiating operation

When required, requests for authorisation to perform and assemble modifications should be accompanied by the following documentation:

a) General description of the modification, identifying the underlying causes for it

b) Standards to be applied in the design, construction, assembly and testing of the modification

c) Basic design of the modification

d) Organisation foreseen and quality assurance programme for performance of the project

e) Identification of the scope and content of the analyses required to demonstrate the compatibility of the modification with the rest of the facility and to guarantee that the levels of safety of the facility continue to be maintained

f) Destination of equipment to be replaced

g) Procurement plan and budget in the case of major modifications

Authorisation for dismantling

On expiry of the operating permit, this authorisation allows the licensee to initiate activities for decontamination, the disassembly of equipment, the demolition of structures and the removal of materials, the ultimate aim being to allow for the full or restricted release of the site. The dismantling process will finish with the declaration of decommissioning.

The request for the decommissioning permit shall be accompanied by the following documentation:

a) Safety analysis

b) Operating regulation

c) Technical specifications applicable during the dismantling phase

d) Quality assurance manual

e) Radiological protection manual

f) Site emergency plan

g) Radioactive waste and spent fuel management plan

h) Site restoration plan

i) Economic study of the dismantling process and financial arrangements to address it

j) Physical protection plan

k) Plan for the control of declassifiable materials

The decommissioning permit will include the general approach to be adopted and, if the process is to be carried out in different phases, will regulate only the activities foreseen for the immediate phase of performance.

On completion of the dismantling activities, and once the forecasts of the radioactive waste management plan have been met and the CSN has verified achievement of the technical conditions established in the dismantling programme, the MITYC will issue the declaration of decommissioning, following a report by the CSN. This declaration will release the licensee of the facility from his responsibility as operator and define, in the event of restricted release of the site, the applicable limitations on use and the party responsible for maintaining such limitations and monitoring compliance with them.

Prior to issuing the declaration of decommissioning, the aforementioned Ministry will transfer the matter to the Autonomous Communities having competences in relation to land planning and the environment and in whose territory the facility is located for them to submit any allegations within a period of one month.

2. System for the licensing of radioactive facilities

According to the RNRF, radioactive facilities are understood to be as follows:

- ✓ Facilities of any type that contain a source of ionising radiations
- ✓ Apparatus producing ionising radiations and operating at a difference of potential in excess of 5 kV
- ✓ Establishments, laboratories, factories and facilities at which radioactive materials are produced, used, possessed, treated, handled or stored, except in the case of incidental storage during transport.

Radioactive facilities are divided into three categories.

1. First category radioactive facilities are those involved in the nuclear fuel cycle, industrial irradiation installations and those complex installations at which very high inventories of radioactive substances having a potentially significant radiological impact are handled.
2. Radioactive facilities involved in the nuclear fuel cycle, that is to say manufacturing installations producing uranium, thorium and their compounds, or facilities producing natural uranium fuel assemblies, will require the same authorisations as nuclear facilities. The requests and arrangements for such authorisations, and their awarding, shall be carried out in accordance with the process described above in section 1, with the corresponding documents adapted to the special characteristics of these facilities.
3. Radioactive facilities used for scientific, medical, commercial or industrial purposes are classified in one category or another on the basis fundamentally of their radiological characteristics. This type of facilities will require an operating permit, a declaration of decommissioning and, where appropriate, authorisation for modification or change of licensee.

The request for the operating permit for radioactive facilities with scientific, medical, commercial or industrial purposes shall be accompanied by the following documents:

a) Descriptive report on the facility

b) Safety analysis: analysis and assessment of the risks that might arise as a result of the normal operation of the facility or of an accident.

c) Verification of the facility: Containing a description of the tests to which it has been subjected

d) Operating regulation: Practical measures guaranteeing the safe operation of the facility

e) List of foreseen personnel, organisation and responsibilities of each job post

f) Site emergency plan: Measures foreseen and assignment of responsibilities to address accident conditions

g) Arrangements foreseen for decommissioning and economic coverage to guarantee it

h) Economic budget of the investment to be made

In the case of first category facilities, the following documentation shall also be submitted:

a) Information on the site and surrounding area.

b) As part of the Operating Regulation:

- Quality Assurance Manual

- Radiological Protection Manual

- Operating Technical Specifications.

c) Physical Protection Plan.

The Ministry of Industry, Tourism and Trade shall be responsible for the granting of operating permits, authorisations for the change of licensee and declarations of decommissioning for first category radioactive facilities. These authorisations will include transfer of the corresponding documentation to the Autonomous Community for the submittal of allegations within a period of one month.

The granting of all other authorisation for radioactive facilities regulated in this chapter shall be the responsibility of the Directorate General for Energy Policy and Mines.

When the licensee is ready to initiate the operation of the facility, he shall notify the CSN for the latter to perform an inspection of the installation. Once the CSN considers that the facility is in a position to operate safely, it will inform the MITYC for the latter to issue a Start-Up Notification, which will empower the licensee to initiate operation of the facility.

Changes affecting the ownership of the facility, its location, the activities that may be performed under the authorisation granted, the category of the facility or the incorporation of particle accelerators or additional radioactive material not previously authorised shall require authorisation via the same process as that applied for issuing of the operating permit.

Changes and modifications affecting other aspects of the design or operating conditions authorised for the facility shall require only the express acceptance of the Nuclear Safety Council prior to implementation, the latter informing the Ministry of Industry, Tourism and Trade.

Requests for the declaration of decommissioning shall be accompanied by the following documentation:

a) Technical decommissioning study

b) Economic study, including the cost of decommissioning and financing arrangements foreseen

Once the CSN has checked for the absence of radioactive substances or equipment producing ionising radiations, and the results of the contamination analysis of the facility, it will submit a report to the MITYC, which will issue the declaration of decommissioning for the installation.

In accordance with the provisions of the Spanish Constitution, the different Statutes of the Autonomous Communities and the corresponding legal provisions, the services and functions of the MITYC dealing with second and third category radioactive facilities have been transferred to the various Autonomous Communities. The Autonomous Communities affected by these transfers are those of Catalonia, the Basque Country, the Balearic Islands, Murcia, Extremadura, Asturias, Madrid, Galicia, Cantabria, the Canary Islands, Ceuta, Navarra, Valencia, Castilla y León, and La Rioja[1].

[1] *The third additional provision of Law 15/1980, creating the CSN, empowers this Organisation to commission to the Autonomous Communities the exercising of certain functions attributed to it. However, these commissions are not considered to constitute transfers, since, in accordance with the Law by which it was created, the CSN is the body solely responsible for nucler safety throughout the entire national territory*

3 Public information and participation in the process of authorising facilities

Both the RINR and the standards relating to environmental impact require processes of public information, the most relevant of which is the one undertaken with respect to the preliminary authorisation of the facility. It would also be interesting to mention Law 27/2006, of July 18th, which regulates rights to access information, public participation and the right to justice in relation to environmental matters, and which recognises the right of any physical or legal person to access information on the environment in the hands of the public Administrations, as well as the obligation of the latter to make available such information. Likewise, Spain has approved and ratified in 2004 the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in issues relating to the environment, done in Aarhus (Denmark).

As regards the arrangements for the preliminary authorisation for nuclear and radioactive facilities involved in the nuclear fuel cycle, the RNRF establishes that on reception of the request, the Regional Office of the Government in the Autonomous Community in which the facility is to be located will open a period of public information. This will begin with publication in the Official State Gazette and in that of the corresponding Autonomous Community of an announcement indicating the objective and the main characteristics of the facility, such that within thirty days of such publication those persons and entities considering themselves to be affected by the project may present whatever allegations they deem to be appropriate. On expiry of the thirty day period of public information, the said Government Office shall carry out the pertinent checks, as regards both the documentation submitted by the public and the written allegations, and shall issue a report, sending the file to the MITYC and a copy to the CSN.

The legal provisions on environmental impact[1] establish that the following shall be subject to an environmental impact assessment: public or private projects consisting of the performance of works, facilities or any activity relating, among others, to nuclear power plants and other nuclear reactors and facilities designed for the production or enrichment of nuclear fuel, the treatment of irradiated nuclear fuel or of high level waste, the disposal of irradiated nuclear fuel, exclusively the disposal of radioactive waste and exclusively the storage (for more than ten years) of irradiated nuclear fuels or radioactive waste at locations different from those at which they were produced. The process of public information shall be carried out jointly for the environmental impact assessment and the preliminary authorisation for the facility. The environmental impact statement shall be drawn up by the Ministry of the Environment in coordination with the CSN and shall be issued jointly with the preliminary authorisation for the facility.

Furthermore, the RNRF also requires that an information Committee be in operation during the construction, operation and dismantling of nuclear power plants, this being a collegiate body whose missions are to inform the different entities represented on the development of the activities regulated in the corresponding authorisations and jointly deal with questions of interest for these entities. The committee is presided over by a representative of the MITYC and includes one representative each of the licensee of the facility, the CSN, the Government Delegation, the Autonomous Community and the municipal area or areas in whose territory the facility is located. Other representatives of the Public Administrations may also sit on the Committee when the nature of the matters to be dealt with so requires.

[1] *Royal Legislative Decree 1/2008, of January 11th, approving the reworded text of the Law on the assessment of the environmental impact of projects. Law 9/2006, of April 28th, on assessment of the effects of certain plans and programmes on the environment. Regulation on the assessment of environmental impact (Royal Decree 1131/1988, of September 30th Official State Gazette 05.10.1998).*

In operation at municipal level is the Association of Municipalities with Nuclear Power Plants (AMAC), which acts as a go-between with the Administration regarding a series of aspects relating to nuclear power plants.

At another level of information and in general the CSN is assigned, among other functions, that of informing the public on matters within its realm of competence, without prejudice to the advertising of its administrative activities in the legally established terms.

ANNEX C

REFERENCES TO OFFICIAL NATIONAL AND INTERNATIONAL REPORTS RELATING TO SAFETY

NATIONAL REPORTS

- ✓ Annual CSN reports to the two Houses of the Spanish Parliament and to the Parliaments of the Autonomous Communities concerned.
- ✓ Decisions on nuclear safety and radiological protection submitted by the CSN to the Ministry for authorisations for nuclear and radioactive facilities.
- ✓ Reports on aspects of safety and radiation protection in relation to radioactive waste management submitted by the CSN to the Congressional Commission for Industry and Energy.

INTERNATIONAL REPORTS

- ✓ National reports on the Convention on Nuclear Safety.
- ✓ National report on the Turkey Protocol, deriving from the Barcelona Convention.
- ✓ National reports on the OSPAR Convention.
- ✓ Reports to the IAEA on illicit trafficking with radioactive material.
- ✓ Reports to the European Commission in compliance with the EURATOM Treaty.
- ✓ Notifications to the European Commission in the event of radiological emergency (ECURIE system)
- ✓ Notifications to the IAEA emergency response system.

ANNEX D

References to reports of international examination missions performed on request by a contracting party

IRRS (Integrated Regulatory Review Service) Mission

This inspection, which was applied for by the Spanish Government in response to a request from the Nuclear Safety Council (CSN), has allowed a detailed check to be made of compliance with the safety standards and guidelines of the United Nations Organisation.

Specifically, the IAEA review covered eight different areas: legislative and governmental responsibilities; responsibilities and functions of the regulator; organisation; the process of authorisation; revision and assessment of licensee requests; inspections and the system of sanctions; the drawing up of regulations and guides and the management system of the body.

The mission included aspects relating to security, this being the first time that such a full-scope intervention had ever been performed in relation to a nuclear safety and radiological protection regulatory body, and took place between January 28th and February 8th 2008.

SCART (Safety Culture Assessment Review Team) Mission at Santa María de Garoña

IN 2007 the Santa María de Garoña nuclear power plant decided voluntarily to host a mission within the framework of the SCART programme, the objective of which is to undertake external independent assessments of the safety culture. The mission, which took place over two weeks, from November 19th to 30th 2007, was carried out by a team of experts from the IAEA, which identified strengths, best practices and areas for improvement.

ANNEX E

CSN EMERGENCY SITUATIONS ORGANISATION

In Spain the management of nuclear and radiological emergencies is regulated by the national civil defence system and the requirements for the use of nuclear energy and ionising radiations.

From the perspective of civil defence, the system establishes the general principles governing the organisation, responsibilities and the rights and obligations of the members of the public, the public administrations and the licensees of practices in relation to planning, preparedness and response to emergency situations. Also established are the emergency plans for actions outside the facilities when accidents occurring on site have repercussions for third parties.

As regards nuclear regulation, emergency plans are required to exist for each radiological practice and specific criteria are established in relation to the levels and techniques for intervention and the protective measures on which the plans are based.

Given the specific nature of nuclear and radiological emergencies, the CSN undertakes a series of functions in this area that go beyond the realm of competence strictly corresponding to it as the nuclear regulatory body.

In order to be able to fulfil these functions with a suitable degree of efficiency and effectiveness, the CSN has an Emergency Response Organisation (ERO), complementary to its normal working organisation, the operational structure of which is under the exclusive command of the President, who exercises the function of directing the organisation and of taking the appropriate decisions. The CSN technological and logistical units participate in this organisation in accordance with an action plan established specifically for such cases and that is activated depending on the level of severity of the accident giving rise to the emergency.

The CSN Emergency Room (SALEM), which is permanently manned, receives notifications of emergencies, this possibly leading to the activation of the ERO emergency stand-by team, capable of responding to emergency situations within one hour.

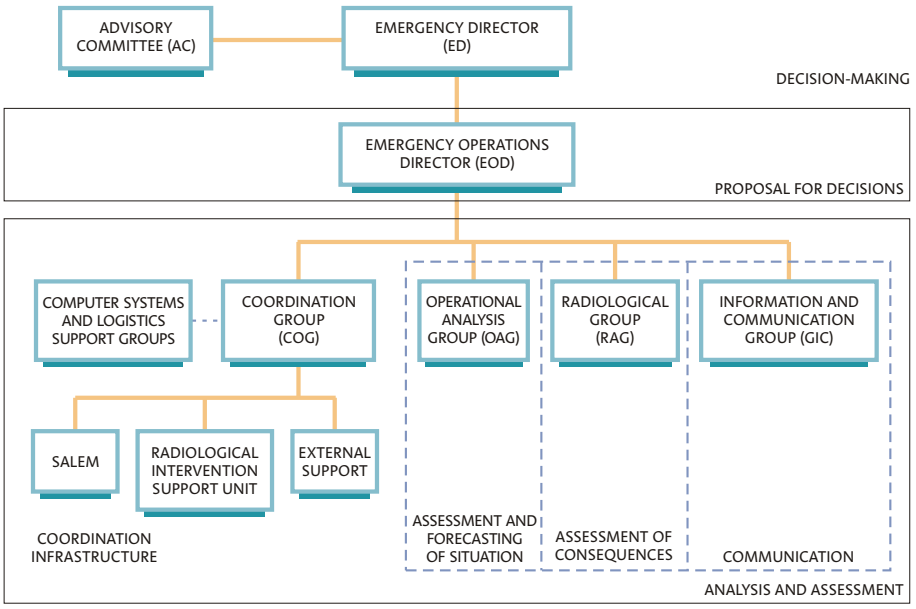
The SALEM, the architectural configuration and communications systems of which have recently been updated, is equipped with adequate communications systems and evaluation tools designed to advise the emergency plan directors of the level of off-site response to be activated, the most conservative evolution of the accident, its potential consequences and the radiological protection measures to be implemented to protect the population.

The CSN Emergency Response Plan includes a personnel training plan that is independent from the training plans for those required to intervene in the off-site emergency plans of the facilities, but coordinated with them. Likewise, the CSN Emergency Response Plan includes a programme of exercises and drills of internal, national and international scope that makes it possible to periodically check the operability of the organisation's technical capabilities and carry out appropriate improvements.

The ERO has a hierarchical structure acting in accordance with the principle of a single command, this being complementary to the ordinary organisation of the CSN.

The ERO is structured around the three following hierarchical levels:

- ✓ The Emergency Director, with advice from a committee made up of the Plenary of the CSN, is responsible for directing the ERO, taking decisions and transmitting



the recommendations of the CSN to the management of the applicable emergency plan, cooperating with the authorities in the task of informing the public. The function of the Emergency Director corresponds to the President of the CSN.

- ✓ The Emergency Operations Director, who is responsible for coordinating all activities and for drawing up proposals for the recommendations to be transmitted by the ED to the management of the applicable emergency plan. The Emergency Operations Director is one of the Technical Directors of the Organisation.
- ✓ The Operating Groups, which are responsible for undertaking the technical activities required for drawing up of the proposals for the recommendations to be transmitted by the Emergency Director to the management of the applicable emergency plan, for activating and coordinating the intervention teams and for preparing the information to be communicated externally.

Specifically, the missions of the ERO Operating Groups are as follows:

- ✓ The mission of the Operating Analysis Group is to analyse the causes of the accident and predict its future evolution and to inform the EOD of the measures that should be taken to take the emergency situation to safe conditions, bearing in mind that the responsibility for decision-making and for adopting the measures required for this to occur correspond to the facility.
- ✓ The mission of the Radiological Group is to analyse the radiological situation arising from the accident, to propose to the EOD protective measures suitable to mitigate the radiological consequences for the population in general, property and the environment and to collaborate in their implementation.
- ✓ The mission of the Information and Communication Group is to provide to the other bodies of the ERO and to the organisations with which the CSN has prompt notification commitments the information on the facility or place of the accident

necessary for the performance of their functions. Likewise, the ICG is in charge of preparing the information on the emergency that is to be provided to the media and the population in compliance with the functions assigned to the CSN.

- ✓ The mission of the Coordination Group (CG) is to keep the infrastructure of the ERO fully operational and ensure the flow of information between its different bodies and with the outside world. This group coordinates the Computer Support and Logistical Support Groups and manages external support and emergency stand-by teams.

The Computer Support Group ensures the operability of the CSN's corporate computer systems in the event of an emergency, providing where appropriate feasible alternatives guaranteeing compliance with the basic functions of the ERO and providing technical support to ensure the correct operability of the data-processing and communications equipment and systems to be used specifically by the different operating groups.

The Logistical Support Group ensures the availability of the logistical resources required for operation of the ERO or provides feasible alternatives guaranteeing compliance with its basic functions, as well as ensuring the safety of the ERO.

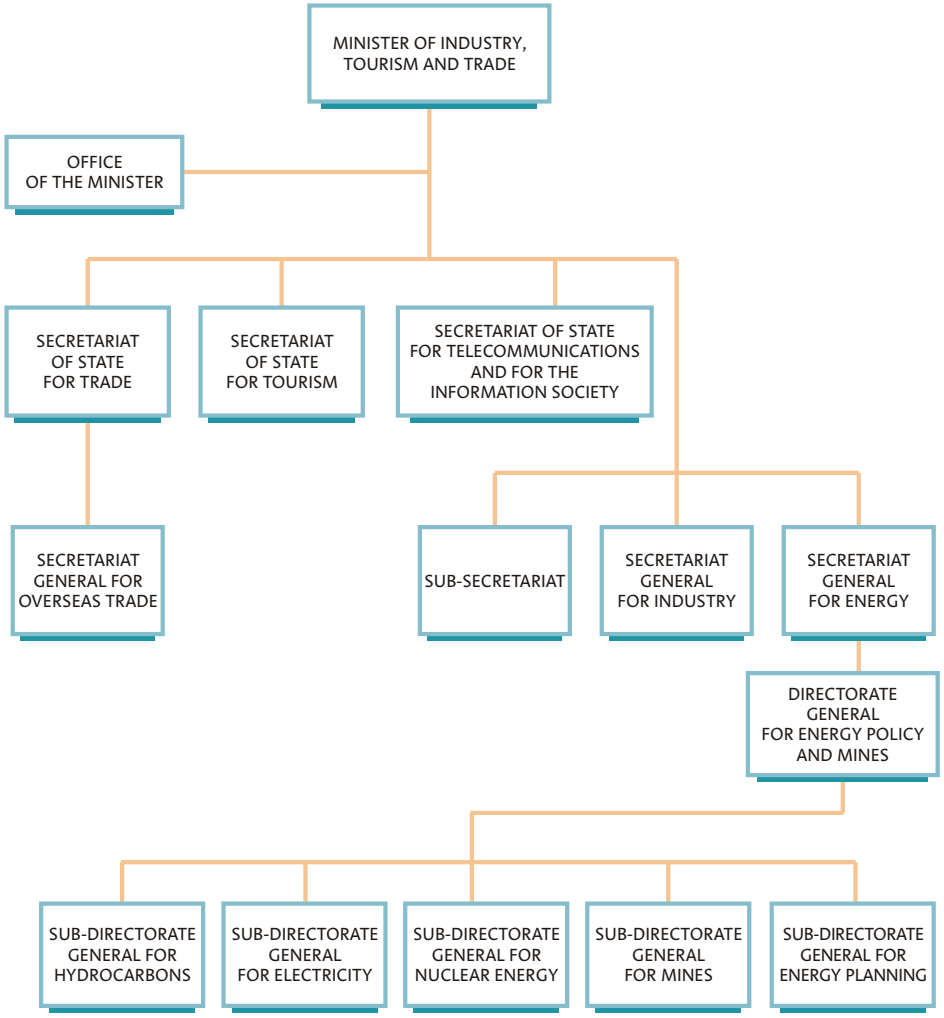
Among other functions, the Sub-Directorate General for Emergencies is responsible within the CSN for maintenance and operation of the SALEM, the management of external support and the management of the emergency stand-by team, as a result of which the activities and responsibilities of the CG are closely linked to the operation of this Sub-Directorate.

The ERO may operate in four Response Modes (from 0 to 3) and its structure is variable depending on the severity, complexity and duration of the emergency and the level of responsibility in decision-making, adapting to the different levels of response as regards the composition of its staff: permanent or mode 0 (SALEM); reduced or mode 1 (stand-by teams); basic or mode 2 and extended or mode 3.

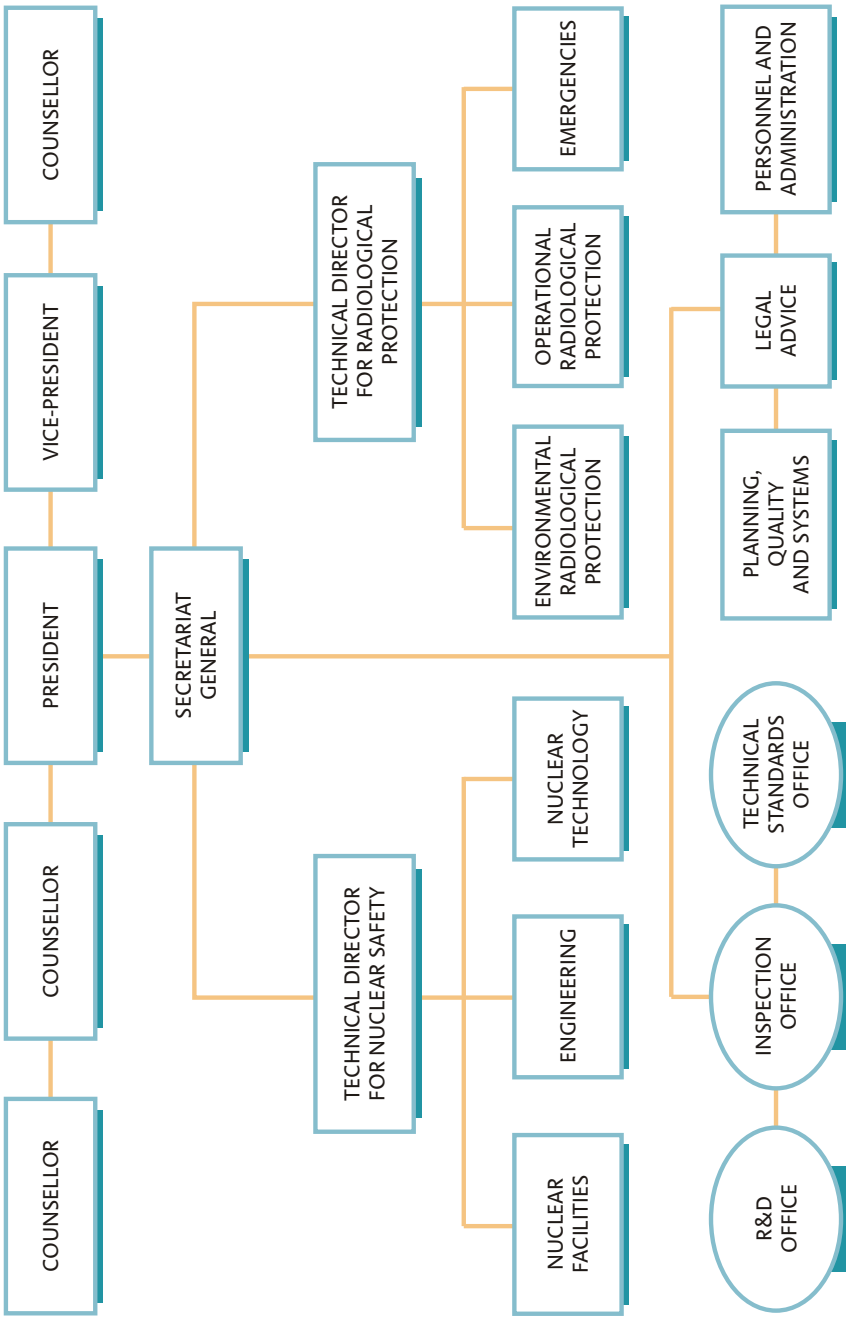
ANNEX F

Organisational flowcharts of organisations and institutions involved in the management of radioactive waste and spent fuel

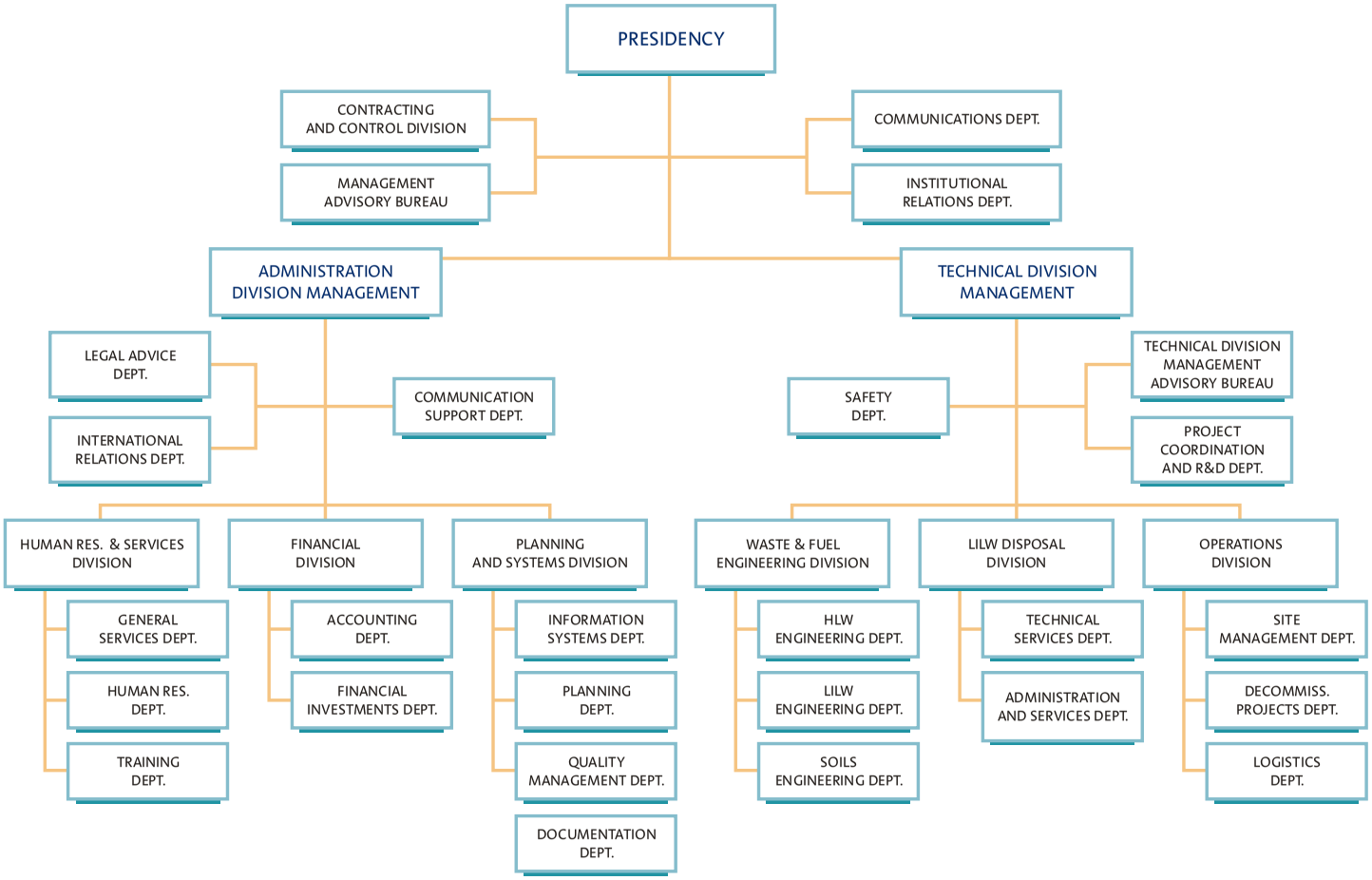
F1. Ministry of Industry, Tourism and Trade (MITYC)



F2. Nuclear Safety Council (CSN)



F3. ENRESA


PRESIDENCY
CONTRACTING AND CONTROL DIVISION
MANAGEMENT ADVISORY BUREAU
COMMUNICATIONS DEPT.
INSTITUTIONAL RELATIONS DEPT.
ADMINISTRATION DIVISION MANAGEMENT
TECHNICAL DIVISION MANAGEMENT
LEGAL ADVICE DEPT.
INTERNATIONAL RELATIONS DEPT.
COMMUNICATION SUPPORT DEPT.
SAFETY DEPT.
TECHNICAL DIVISION MANAGEMENT ADVISORY BUREAU
PROJECT COORDINATION AND R&D DEPT.
HUMAN RES. & SERVICES DIVISION
FINANCIAL DIVISION
PLANNING AND SYSTEMS DIVISION
WASTE & FUEL ENGINEERING DIVISION
LILW DISPOSAL DIVISION
OPERATIONS DIVISION
GENERAL SERVICES DEPT.
HUMAN RES. DEPT.
TRAINING DEPT.
ACCOUNTING DEPT.
FINANCIAL INVESTMENTS DEPT.
INFORMATION SYSTEMS DEPT.
PLANNING DEPT.
QUALITY MANAGEMENT DEPT.
DOCUMENTATION DEPT.
HLW ENGINEERING DEPT.
LILW ENGINEERING DEPT.
SOILS ENGINEERING DEPT.
TECHNICAL SERVICES DEPT.
ADMINISTRATION AND SERVICES DEPT.
SITE MANAGEMENT DEPT.
DECOMMISS. PROJECTS DEPT.
LOGISTICS DEPT.

ANNEX G

INITIALS AND ABBREVIATIONS USED

ALARA	As Low As Reasonably Possible
AMAC	Association of Municipalities with Nuclear Power Plants
AUM	Andújar Uranium Mill
B.O.E.	Spanish Official State Gazette
BWR	Boiling water reactor
CFR	United States Code of Federal Regulations
CIEMAT	Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (Centre for Energy-Related, Environmental and Technological Research)
CSN	Consejo de Seguridad Nuclear (Nuclear Safety Council)
DCP	Design change package
DF	Disposal facility
D.G.	Directorate General
DGD	Deep geological disposal
DGCD & E	Span. Dirección General de Protección Civil y Emergencias (Directorate General for Civil Defence and Emergencies)
DOCE	Official Diary of the European Community
EC	European Community
ECURIE	European Union system for the urgent exchange of radiological information
EEC	European Economic Community
EIA	Environmental Impact Assessment
ENRESA	Empresa Nacional de Residuos Radiactivos, S.A.
ENUSA	ENUSA Industrias Avanzadas, S.A.
EURATOM	European Atomic Energy Community
GRWP	General Radioactive Waste Plan
HIFRENSA	Hispano Francesa de Energía Nuclear, S.A.
HLW	High level waste
IAEA	International Atomic Energy Agency
ICRP	International Commission for Radiological Protection
INEX	International nuclear emergency exercise
INPO	Institute of Nuclear Power Operations
ISF	Industrial Storage Facility
ISO	International Standards Organisation
JEN	Junta de Energía Nuclear (Nuclear Energy Board)

KWU	Kraftwerk Union A.G.
LILW	Low and intermediate level waste
MIMA	Ministerio de Medio Ambiente (Ministry of the Environment)
MINECO	Ministerio de Economía (Ministry of Economy)
MINER	Ministerio de Industria y Energía (Ministry of Industry and Energy)
MITYC	Ministerio de Industria, Turismo y Comercio (Ministry of Industry, Tourism and Trade)
NEA	Nuclear Energy Act
NEA-OECD	OECD Nuclear Energy Agency
NEP	National Energy Plan
NPP	Nuclear power plant
NUREG	NRC technical publication
ODCM	Off-site Dose Calculation Manual
OECD	Organisation for Economic Cooperation and Development
OI	Operating instruction
O.M.	Orden Ministerial (Ministerial Order)
OSPAR	Convention for the protection of the north-east Atlantic marine environment
OTS's	Operating Technical Specifications
PCP	Process control programme
PIMIC	Plan Integrado para la Mejora de las Instalaciones del Ciemat (Integrated Plan for Improvement of the Ciemat facilities)
PLABEN	Plan Básico de Emergencia Nuclear (Basic Nuclear Emergency Plan)
PSA	Preliminary Safety Analysis
PSR	Periodic Safety Review
PWR	Pressurised water reactor
R.D.	Royal Decree
REMP	Radiological Environmental Monitoring Program
R.G.	NRC Regulatory Guideline
RNRF	Regulation on Nuclear and Radioactive Facilities)
RPIR	Regulation on Protection against Ionising Radiations
RWMP	Radioactive Waste Management Plan
R&D	Research and Development
SA	Safety Analysis
SACO	Sala de Coordinación Operativa (Operations Coordination Room)
SALEM	Sala de Emergencias del CSN (Emergency Room of the Nuclear Safety Council)
SEPI	Sociedad Española de Participaciones Industriales (Spanish State Industrial Holding)
SG	Safety guide
SF	Spent fuel

SFSP	Spent fuel storage pool
UKAEA	United Kingdom Atomic Energy Authority
UNESA	Spanish Electricity Industry Association
UPC	Polytechnic University of Catalonia
US-NRC	United States Nuclear Regulatory Commission
WANO	World Association of Nuclear Operators