

# Spanish Nuclear Safety Council report to the Parliament

Year 2005 Summary

**CSN**

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## Introduction

In compliance with article 11 of the Law by which it was created (Law 15/1980), the Nuclear Safety Council hereby submits to the Spanish Congress its annual report, in this case on the activities carried out during 2005. The fourth additional provision of Law 14/1999 on Tariffs and Public Prices for services rendered by the CSN changed the frequency of this document from six-monthly to annual, as a result of which this is the seventh annual report submitted to Parliament.

The year 2005 marked the 25<sup>th</sup> anniversary of the Nuclear Safety Council. It is appropriate at this juncture to look back on the efforts made by the current and former teams in managing the Organisation, as well as by the personnel of the CSN in the ample task undertaken over the years. Increasing dedication has been given to the functions entrusted to the Organisation by the aforementioned Law 15/1980, and to performance of the work arising from the resolutions approved by the different Congressional Commissions for Industry and Energy that have dealt with these issues over the last 25 years and that have been of great use.

Consequently, recognition should be given also to the continuous attention given by the members of the Congress and the Senate that have participated in the commissions in charge of tracking the nuclear safety and radiation protection activities of the CSN and to the invaluable help that they have provided.

It is, therefore, appropriate to take a brief look at the functions of the CSN over the last 25 years, which may be summarised in terms of a task dedicated entirely to supervising and ensuring that the nuclear and radioactive facilities are constructed, operated and maintained safely.

The CSN is an entity existing under public law, independent from the State Administration and having its own legal standing and equity, which undertakes the functions attributed to it by law in an autonomous and objective manner, reporting on its activities to the Spanish Parliament.

Since it was created in 1980, the Council has assumed maximum responsibility for nuclear safety and radiation protection throughout Spain,

watching over and controlling the operation of the country's nuclear and radioactive facilities.

As a consulting body, the Council issues mandatory reports to the central and autonomous administrations, most of them binding, on a large number of issues established by law.

The Nuclear Safety Council is a professional body constituted by a president and four board members, whose appointment by the Government is endorsed by the Congress, with the need for a qualified majority.

The concept of safety is dynamic and has evolved throughout the 20<sup>th</sup> century as nuclear technology has progressed. It entails an integral approach and covers both the internal and external aspects involved. The processes of on-going improvement in which the CSN is immersed will also lead to an evolution in the 21<sup>st</sup> century, aimed at improving its own safety culture and that of the groups concerned.

The objective of nuclear safety is to protect the workers at the facilities, the general public and property against the risks arising from the use of such facilities, minimising the probability of accidents occurring or their consequences were they to take place. For this purpose safety standards have been developed covering all the activities performed at nuclear power plants: design, siting, construction, equipment manufacturing and assembly, testing, operation, maintenance, modifications and changes to the organisational structure, with special emphasis on the off-site electrical system and human factors.

Consequently, the concept of safety, linked to another known as the "safety culture", has three main components:

- Technology, revolving around defence in depth or safety at any price and covering specifically the nuclear and electrical areas: turbine, generator, electrical equipment. This consists of establishing successive levels of protection with adequate mechanisms at each capable of compensating or correcting whatever failures might occur at the previous level.

There are also other technical requirements or principles relating to quality assurance, qualification of the personnel, operating experience and

operating procedures that complement the principle of defence in depth, ensuring that the safety systems will perform in accordance with their design, that human interventions will be correct and that the safety conditions of the plant are updated as a result of operating experience and the technological R&D programmes.

- Guarantee of off-site safety: electricity lines and electrical system. The plants should evacuate the electricity generated and receive an off-site electricity supply guaranteeing the essential core cooling systems.
- Security of the entire installation, not only the protected zone.

A partial or compartmentalized view of a function or of an item of equipment is out of place in the industrial environment – and that is what nuclear power plants are, industrial facilities producing electricity – where electrical, mechanical and nuclear systems and fluids are operated.

From the point of view of safety, regulation should cover all these demands, and in an increasingly integrated manner. For this reason the CSN has initiated the updating of its working processes and procedures, the necessary structure, new inspection, surveillance and supervision procedures, revision of its participation in emergency plans and the installations necessary for heightened operability in such emergencies, improved training programmes and other issues such as international and institutional relations, internal and external communications, participation in R&D programmes and closer collaboration with the autonomous communities and local bodies.

Work began in 2005 for performance of the task requested from the International Atomic Energy Agency, whose headquarters are in Vienna, in relation to its IRRS mission with respect to the CSN, in order to allow Spanish regulatory practices to be compared to international standards and good practices in this domain. On the basis of this comparison recommendations and suggestions will be established to improve these practices. We have initiated a profound self-assessment process for the identification of strengths and weaknesses in the regulatory structure, to subsequently draw up action plans aimed at improving it. The IAEA mission and our self-assessment cover the following areas:

- Regulatory Body.
- International relations.

- Process of authorisation.
- Examination and assessment.
- Inspection and enforcement.
- Drawing up of regulations and guidelines.
- Emergency preparedness.
- Radioactive waste management and decommissioning.
- Radiation protection and transport.
- Security.
- Management systems.

Particularly significant is increasing the efficiency of the regulatory process, since in Spain there is no technical regulatory body. This is because the standards produced have been oriented essentially towards resolving administrative and procedural aspects. The standards employed in the country of origin of the technology of the plants have been used for technical aspects since, in view of the absence of national standards, it has been considered acceptable that the plants fulfil in Spain the same requirements as in the countries in which their construction was authorised. Like the technology, these standards come from the United States and Germany.

The adoption of this criterion, which made it possible to license the Spanish nuclear power plants, has continued to the present day, but now it is necessary to move in the direction of completing our own regulatory framework in relation to standards.

Also under way in addition to these tasks is the harmonisation of the levels of safety of European reactors, as it concerns Spanish reactors, with a view to collaborating in the work performed by WENRA (Western European Nuclear Regulators Association) regarding the availability of nuclear safety and radiation protection standards throughout Europe, as well as their implementation at the Spanish plants.

2005 saw the approval and start-up of the Strategic Plan for 2005-2010, which took into account the current conditions of the environment and those in the foreseeable future and established the results expected to be obtained, the strategies and the objectives for the next five years.

The Strategic Plan represents the commitment of the entire organisation as regards the results expected, the objectives established and the channels and media to be used to achieve them.

Thirty-nine reportable events occurred at the nuclear power plants in 2005, a number similar to that registered in 2004. Two of these, both at the Santa María de Garoña plant, were classified at level 1 on the International Nuclear Events Scale (INES).

The event that occurred at the Vandellós II nuclear power plant on August 25<sup>th</sup> 2004 was initially classified as level 1 on the INES scale, and subsequently reclassified at level 2. This event, which involved the rupturing of a manhole in the essential services water system due to corrosion, was considered a generic issue and implied a request for its analysis by all the plants and reports on its applicability from the technical and organisational points of view to each of the Spanish nuclear power plants. This evaluation was carried out during the foreseen timeframe and in the initial stage no deficiencies requiring immediate action have been identified. There are still issues pending analysis and the improvement actions foreseen are considered positive.

The operating experience evolved correctly throughout 2005, as was shown by the results obtained from the CSN supervision and control activities and reflected by the indicators used to assess the operation of the plants. Mention should be made of the fact that in the long term all the indicators, except the *Average number of significant events* and the *Average forced outage rate*, showed a decreasing trend over the 10 years analysed. Last year we reported on the increasing trend shown by this last indicator over the last three years, this now having translated into a change in trend in the long term, further accentuated by the outage at Vandellós II.

A decreasing or stable trend may be observed in the short term in all cases, with the exception of those mentioned above. However, in no case is it considered necessary to undertake any special tracking of the evolution of the indicator.



Also particularly significant is the new systematic plant operations assessment programme that we call IPSS. The IPSS (Integrated Plant Supervision System) has been developed on the basis of the US NRC's Reactor Oversight Process (ROP), adapting it to the situation of the Spanish plants. This programme was implemented at the beginning of 2006, although a pilot phase of application began in July 2005. This programme is based on risk-informed regulation and its basic criteria are as follows:

- Concentration of inspections on the areas of highest potential risk.
- Greater attention to plants having the worst performance record.
- Use of objective plant operation measures.
- Provision for the public and the industry of quick and understandable evaluations of plant operations.
- Reduction of unnecessary regulatory burdens on the Plants.
- Response to deviations or cases of non-compliance in a predictable manner and in proportion to the risk.

The IPSS entails a risk-informed approach, especially in the area of nuclear safety, and is structured around strategic areas and pillars of safety ordered logically towards compliance with the mission of the regulatory organisation. There are three strategic areas: nuclear safety, radiation protection and security, and seven pillars of safety linked to them that encompass the essential safety aspects of safety in operation of the facility. Satisfactory results for the seven pillars of safety provide a reasonable guarantee that the mission of the regulatory organisations is being fulfilled.

A methodology is being developed for the CSN to perform an annual self-assessment regarding the development of the programme and to request the opinion of the nuclear power plants, also annually, with a view to incorporating into the programme whatever improvements are considered appropriate. The IPSS was conceived as a living supervision programme that would be progressively modified as possible improvements are identified.

The total number of inspections of nuclear facilities performed during the year was 211, 153% of those scheduled, this representing a very important

inspection effort. A large percentage of the non-scheduled inspections were carried out with respect to the Vandellós II plant, due to its special situation.

The total number of hours dedicated to inspections at nuclear facilities was 47,434.

As regards the specific actions carried out at the Vandellós II plant during 2005, the CSN dedicated much effort and a large number of hours in evaluating, inspecting and tracking the action plans submitted by the licensee to resolve the organisational and management deficiencies identified as a result of August 2004 event, in which a manhole ruptured due to heavy corrosion of a pipe in train B of the essential services water system.

During 2005 refuelling outages were performed at the Ascó II, Almaraz I, José Cabrera, Vandellós II, Trillo, Santa María de Garoña and Cofrentes plants.

In relation to the radiation protection of the nuclear power plant workers, 7,086 of them were exposed and dosimetrically controlled. These dosimetric readings implied a collective dose of 7,333 mSv.person, the average overall individual dose for this group being 2.04 mSv/year. The calculation of this parameter considered only workers with significant doses. This individual average dose reached 4.07% of the maximum annual dose allowed by the dose regulations (50 mSv/year).

The main contribution to collective dose in this sector (6,296 mSv.person) corresponded to the contracted personnel, with an individual average dose of 2.14 mSv/year. In the case of personnel on the payroll, the collective dose amounted to 1,037 mSv.person, with a total 1,957 workers and an individual average dose of 1.52 mSv/year.

As regards internal dosimetry, controls were carried out by directly measuring body radioactivity in all the workers running a significant risk of radionuclide incorporation, and in no case were values in excess of the established registration level (1 mSv/year) detected.

As regards other fuel cycle installations, the Juzbado fuel assembly manufacturing facility (Salamanca), which produces fuel assemblies of uranium oxide

and mixtures of uranium oxide and gadolinium oxide, with a maximum Uranium-235 enrichment of 5% by weight, for pressurised water and boiling water reactors, operated normally throughout 2005. This was classified as a nuclear facility and 10 inspections were performed at the installation during the year.

During 2005 evaluation of the adaptation of the effluent methodology and Environmental Radiological Surveillance Plan to the nuclear power plant model continued. The licensee sent the new operating specifications and safety analysis revision proposals for approval to the Directorate General for Energy Policy and Mines, in accordance with CSN recommendations.

Ten inspections were performed in 2005.

During 2005 the El Cabril waste disposal facility carried out operations relating to reception, temporary storage, treatment, conditioning and definitive disposal in cells for the low and intermediate level wastes generated by the nuclear and radioactive installations. The facility received 3,909 packages or containment units, plus 16 samples, of low and intermediate level radioactive wastes, 2,373 and 16 samples from nuclear facilities and 1,536 from radioactive facilities.

During 2005, the CSN carried out control of the inventory of spent fuel assemblies and the high level wastes in storage and the operation of the temporary storage facilities existing in Spain. Likewise, it continued with the actions required for compliance with the obligations deriving from international commitments and studies for definition of the regulatory framework for additional facilities foreseen for the longer-term management of spent fuel and high level radioactive waste, in accordance with the current situation and the forecasts of the 5<sup>th</sup> General Radioactive Waste Plan in force, approved in 1999.

The spent fuel generated at the Spanish nuclear power plants is currently in temporary storage in the pools associated with the design of each of the plants and in the individualised temporary storage (ITS) facility on the site of the Trillo plant, with the exception of the fuel generated prior to 1983 at the José Cabrera and Santa María de Garoña plants, which was sent to Great Britain for reprocessing, and all the fuel generated during the operating lifetime of the Vandellós I plant, which was sent to France, also for reprocessing.

As contemplated in article 28 of the *Regulations on nuclear and radioactive facilities* (RINR), the definitive shutdown of the José Cabrera nuclear power plant in April 2006, for dismantling, will require the fuel to be unloaded from the pool prior to the dismantling of the plant or the availability of a plan for the management of this fuel. The solution adopted for the storage of the fuel from José Cabrera was the construction of an individualised temporary storage (ITS) facility on the plant site.

The José Cabrera ITS licensing process consists of two parts: approval of the storage system, for which Enresa is responsible, and the part corresponding to the installation itself, which will be undertaken by the licensee, Unión Fenosa Generación.

By 2010 other solutions additional to those described above will be required for the temporary storage of the high activity wastes returned from France, for other wastes which, in view of their activity, cannot be sent to the El Cabril low and intermediate level waste disposal facility, and for the storage of spent fuel as the plant pools become saturated. The preferred or basic solution for this is a centralised temporary storage (CTS) facility, although other solutions are not ruled out.

The CSN gives special importance and dedication to the radiological control of exposed workers. The National Dosimetry Bank centralises the dosimetry histories of the exposed workers at the Spanish nuclear and radioactive facilities. As of the closure of the 2005 dosimetry year, a total of approximately 11,660,785 dosimetry measurements had been registered, corresponding to some 238,700 workers and some 40,370 installations. Each of these measurements carried information on the type of installation and the type of work performed by the worker.

The number of persons in Spain exposed to ionising radiations and dosimetrically controlled in 2005 amounted to 92,768, with a collective dose of 52,491 mSv.person.

A noteworthy fact is that, although the maximum regulatory effective dose in any one official year is 50 mSv:

- 97.26% of the dosimetrically controlled workers (90,228) received doses lower than 6 mSv/year.
- 99.58% of the dosimetrically controlled workers (92,375) received doses lower than 20 mSv/year.

The following are among the functions assigned to the CSN: control of the radiological protection measures applicable to the public and the environment; control and surveillance of off-site releases of radioactive materials from nuclear and radioactive facilities and of their particular or accumulated impact on the areas of influence of these installations, estimating their radiological impact; control and surveillance of the radiological quality of the environment throughout the national territory, in compliance with the international obligations of the Spanish State in this area, and collaboration with the competent authorities in environmental radiological surveillance outside the area of influence of these installations.

Facilities potentially producing significant radioactive releases are subject to administrative authorisations. The licensees of such facilities are responsible for the application of these surveillance programmes, which are required to be adequate for the characteristics of each installation and of the surrounding areas.

In the rest of the country the CSN has established and operates, a national environmental radiological surveillance network (Revira) in collaboration with other institutions. This is used to watch over and maintain the radiological quality of the environment and is made up of the following:

- The Sampling Stations Network (REM), where surveillance is accomplished by means of sampling and analysis programmes including programmes of surveillance of the aquatic medium (continental and coastal waters) and programmes for surveillance of the atmosphere and the terrestrial environment, undertaken by different laboratories.
- The continuously measuring Automatic Stations Network (REA), which provides real-time data on the values of concentrations of activity in the atmosphere and on the levels of environmental radiation in different areas of the country.

From the evaluation of the results of these surveillance programmes it may be concluded that the releases from the facilities represent only a small

fraction of the established limits and that no significant variations are observed with respect to the values normally obtained from environmental radiological surveillance programmes, the radiological quality of the Spanish environment being maintained.

A basic aspect of the tasks of the CSN is the attention paid to nuclear and radioactive emergencies. During 2005 collaboration with Civil Defence continued in application of the *basic nuclear emergency plan* (Plaben).

On November 7<sup>th</sup> 2005, as part of the events commemorating the 25<sup>th</sup> anniversary of the CSN, the Council's new emergency room was officially inaugurated by the Minister of Industry, Tourism and Commerce, who was accompanied by the members of the Plenum of the CSN, the presidents of the commissions for Industry, Tourism and Commerce of the Spanish Congress and the lady director general of Civil Defence and Emergencies, among other authorities. The emergency room is the Council's operational coordination centre for emergency response.

The new Salem has been fully operative since August 2005 and has implied the complete renovation of the architectural, functional and operative aspects of the facility as part of the programme for enhancement of the CSN's nuclear and radiological emergency management capabilities. During the works a provisional room was made available, guaranteeing the permanent attention of the Salem 24 hours a day, 365 days a year.

Throughout 2005 there was no emergency situation or incident leading to the activation of the CSN emergency room.

The security programmes have operated normally.

The integrated security model for the Spanish nuclear power plants, approved by the Nuclear Safety Council in June 2002, rests on three basic pillars: the facility security system, support from the Security Forces and Corps in cases of contingency, in accordance with specific off-site action plans, and the preventive information plan for the determination of threats.

While the specific action plans and the preventive information plan are the responsibility of the different operating units and services of the Security

Forces and Corps, the site security system is the exclusive responsibility of the licensee of the nuclear facility or materials.

As regards standards, the CSN has a far-reaching programme under way for the development of the provisions required nationally and internationally.

The strategies and objectives mapped out in the Strategic Plan for 2005-2010 in relation to institutional relations were fulfilled during 2005: strengthen relations with the Government; promote agreements with the ministries, especially Interior, Defence and Public Health; sign and improve the function transfer agreements, strengthen relations with the delegates and sub-delegates of the Government as those responsible for emergency plans, and promote the agreements signed with universities and institutions. Relations are also being strengthened with local corporations.

Special mention should be made of the numerous appearances before the Congress and Senate, the collaborations with the ministries of Defence, Education, Culture and Sport and the Presidency of the Government and other ministerial departments, as well as with the autonomous communities having function transfer agreement in place with the CSN and with various institutions, universities, companies in the sector and non-governmental organisations.

Activity in the area of international relations is increasing and may be classified in three groups: institutional, technical and all those associated with the preparation and application of international agreements in areas relating to nuclear safety, radiation protection and security. They are all developed on two different planes: multilateral, via international organisations, institutions and forums, and bilateral or direct with peer institutions.

Information and internal and external communications are especially significant for the CSN. The Council has continued with its proactive attitude in relation to communications and has undertaken improvements as regards the time taken to issue information, the ease with which it is understood, adaptation to the information requirements of the media and adaptation of the social perception of risk to reality in different situations.

The CSN makes important efforts to keep society informed with the rigour and objectiveness that a technical organisation should guarantee. During this period, 4,513 telephone calls were received from the media, and responded to, and 63 press releases were issued. These communiqués were sent to the press and to the personnel and institutions included in the action procedures and identified as stakeholders. At the same time, this information was reflected on the CSN website, along with other news items of interest.

A noteworthy event this year, as regards the presence of the CSN on Internet, has been the creation of a section, under the heading of Information and Current Affairs, allowing access to the minutes of Council meetings. This was in response to a social demand from both institutions and stakeholders regarding the transparency of the Organisation in decision-making within its realm of competence.

Likewise, a new electronic administration section was included in order for the licensees of nuclear and radioactive facilities to be able to make certain arrangements with the CSN via Internet. Also during this year a frequently asked questions section were introduced and the content of the section on reportable events were enriched, allowing consultations to be made with regard to events at both nuclear power plants and radioactive facilities and reported to the CSN.

The number of visits to the institutional website during 2005 amounted to 227,011, an increase of more than 151% with respect to the previous year.

As of December 31<sup>st</sup> 2005, the total number of persons working for the Council amounted to 447, 49.44% of which were women.

The initial CSN budget for 2005 was 43,598 thousand euros. With respect to the previous year, the initial budget decreased by 10.71%.

Finally, the attention paid by the CSN to the on-going training of its personnel should be underlined.



## 1. Strategic plan

On January 13<sup>th</sup> 2005, the Council approved its Strategic Plan for the period 2005 – 2010. Taking into account the current conditions, and those in the foreseeable future, the Plan establishes the expected to be achieved, the strategies and the objectives for the next five years.

The Strategic Plan represents the commitment of the entire organisation in relation to the results expected, the objectives mapped out and the methods and resources to be used in achieving them.

The Plan describes the *Mission and Vision of the Organisation*, summarises the analysis of the environment performed for preparation of the Plan and establishes the results expected from the organisation. It also describes the strategies mapped out:

- Safety and protection.

To ensure that the licensees operate their facilities safely, this implying continuous evolution of the regulatory system in order to reinforce the responsibility of the licensees and their safety culture. To promote among all the sectors and agents involved actions aimed at protecting persons and the environment.

- Management and organisation.

To ensure that the use of the resources of the CSN, the public administrations and the licensees be as close as possible to optimum, maintaining the levels of safety and protection demanded.

- Social credibility.

To bring about a situation in which the members of the public, the institutions and the licensees trust that the CSN is performing its Mission properly. In order to achieve this, the CSN must

be perceived as being an independent, efficient, rigorous and dependable organisation providing the stakeholders with clear and accurate information on its action programmes, facilitating participation and demonstrating that its actions are independent and objective.

Likewise, the Plan contains the objectives associated with these strategies and the most significant activities to be carried out in order to achieve the objectives.

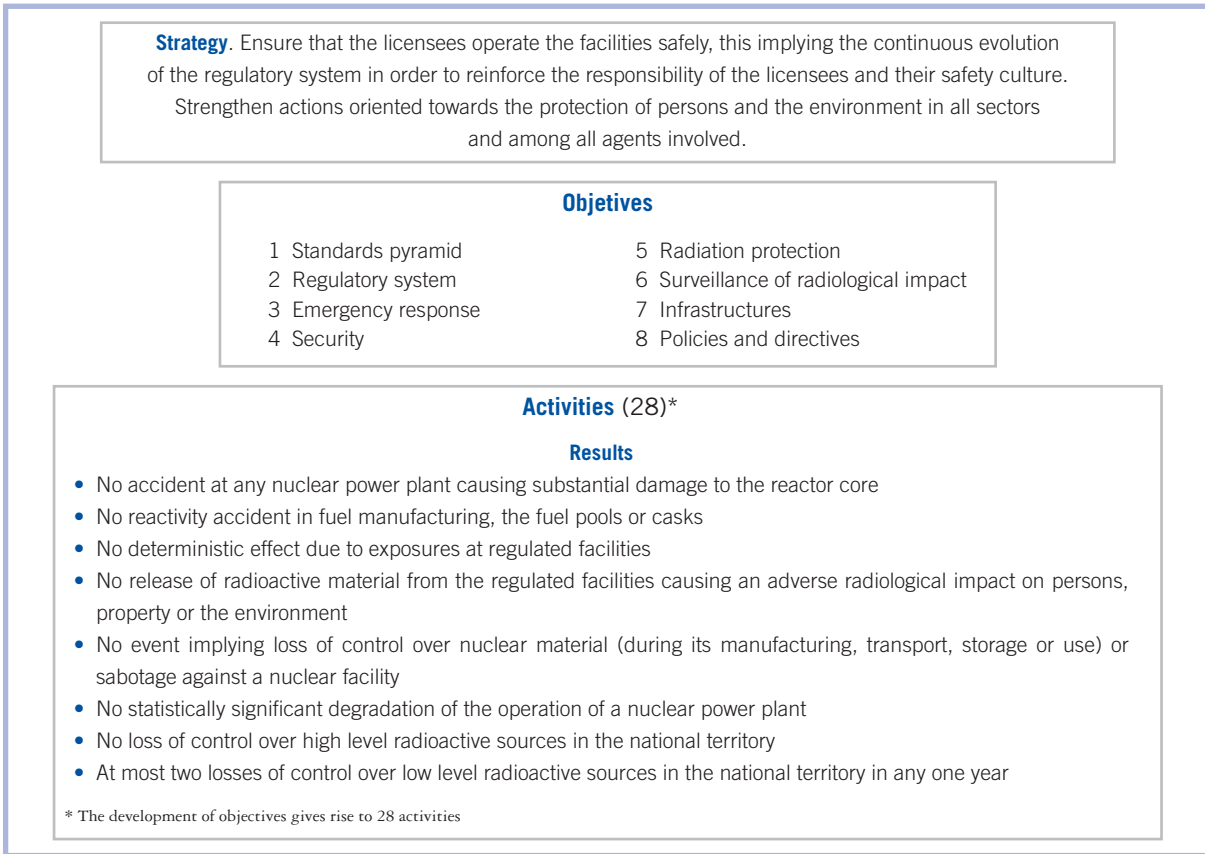
With the implementation of its Strategic Plan, the Council aims to maximise the value of the service it renders to society. Unlike what occurs in profit-making organisations, this value cannot be measured on the basis of economic data but is related to compliance with the CSN Mission (the safety of the facilities and activities), to the suitable management of resources and to the credibility of its actions.

In order to be able to determine objectively that the Strategic Plan has been correctly defined and implemented, the Plan itself establishes that the following results are to be obtained:

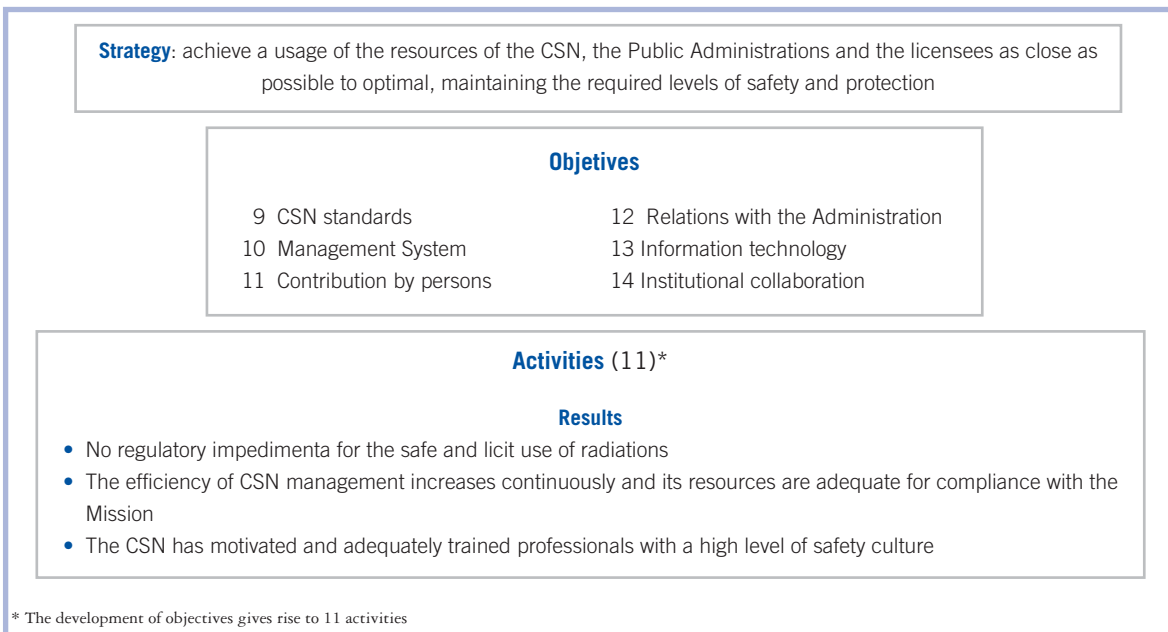
In relation to safety and protection:

- No accident at a nuclear power plant causing substantial damage to the reactor core.
- No reactivity accident at a fuel manufacturing facility or in a fuel pool or cask.
- No deterministic effect due to overexposure at regulated facilities.
- No release of radioactive material from regulated facilities causing an adverse radiological impact for persons, property or the environment.

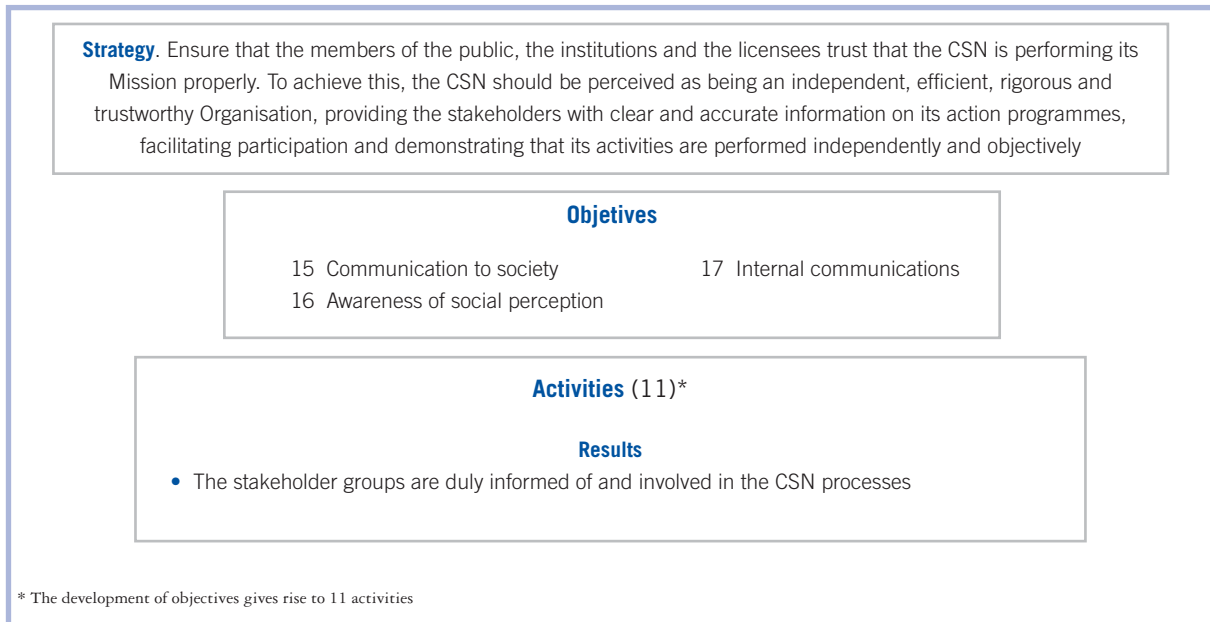
**Figure 1.1. Safety of facilities and activities**



**Figure 1.2. Management and organisation**



**Figure 1.3. Social credibility**



- No event implying the loss of control of nuclear material (during manufacturing, transport, storage or use) or sabotage against a nuclear facility.
- No statistically significant degradation of the operation of a nuclear power plant.
- No loss of control of high activity radioactive sources within the national territory.
- At most two cases of loss of control of low activity radioactive sources within the national territory in one year.

In relation to the management and organisation of the Council:

- No existence of regulatory impedimenta to the safe and licit use of radiations.
- Continuous improvement of the efficiency of CSN management and assurance that its re-

sources are adequate for compliance with its Mission.

- The CSN has motivated professionals with suitable training and a high level of safety culture.

In relation to the social credibility of the Nuclear Safety Council:

- The stakeholders are duly informed and involved in the processes of the CSN.

The CSN Strategic Plan establishes the need to assess compliance with strategic planning, based on internal analysis, feedback from stakeholder groups and external evaluations.

**Internal analysis**

The Planning model that is being drawn up at the CSN for implementation and development of the Strategic Plan requires that, as a preliminary step for preparation of the Annual Work Plan for each

year, an assessment be performed of compliance with the strategic plan and the Annual Plan for the year ending.

### External evaluations

A series of resolutions was approved as a result of the study performed by the Commission of Industry, Tourism and Commerce in relation to the Essential Services Water System piping degradation event that occurred at the Vandellós II nuclear power plant in August 2004. One of these urged the Council to request an independent and detailed international evaluation of its report on lessons learned from the Vandellós II event, approved by the Plenary on November 18<sup>th</sup> 2005.

In order to comply with this resolution, the Council requested the OECD Nuclear Energy Agency to set up an international group of experts to undertake this evaluation.

The first meetings of the Group of Experts and the preparatory interviews with the members of the plenary and the technical staff were held on November 22<sup>nd</sup> and 23<sup>rd</sup> 2005. The completion of the work and the official presentation of the Report were foreseen for the beginning of March 2006.

Spain requested the International Atomic Energy Agency (IAEA) to carry out an Integrated Regulatory Review Service (IRRS) by the end of 2007. The objective of the mission is to compare the regulatory practices of a country with international standards and good practices. This comparison is used to draw up recommendations and suggestions for the improvement of these practices.

The working methodology for performance of this review is as follows:

- Based on its own safety standards, the IAEA develops a series of questionnaires helping the regulatory authorities of the host country to perform its self-assessment, oriented towards identifying strong and weak points in the regulatory structure and drawing up action plans to improve it.
- A group of international experts with direct experience of the different areas then performs an independent peer review. In the case of the CSN, this first review is expected to be performed at the end of 2007 or the beginning of 2008.
- 18 or 24 months after the first review, a new self-assessment and review will be carried out to evaluate the degree of implementation of the improvement actions.

These reviews are a good opportunity to exchange experiences and share lessons learned and good practices. They are not inspections or audits but a mechanism for mutual learning that accepts different approaches regarding the organisation and practices of the regulatory body and that contributes to strengthening nuclear safety and radiation protection.

The review covers the following areas: the Regulatory Body, Relations with other organisations, the Process of authorisation, Examination and assessment, Inspections and the application of Sanctions, the Preparation of Regulations and Guidelines, Emergency preparedness, Radioactive waste management and decommissioning, Radiation protection and transport, Security and Management systems. For this reason diagnosis groups have been set up for the self-assessment that was initiated during the last quarter of 2005, covering the areas on which the review will focus.

## 2. Nuclear safety and radiation protection at the facilities

### 2.1. Nuclear power plants

#### 2.1.1. Operation

The Spanish nuclear power plants operated correctly throughout 2005, as is shown by the results obtained from the CSN's supervision and control activities and confirmed by the indicators used to assess their operation, as shown in figure 2.1 (figure 2.1.b operating parameters).

The following may be singled out from among the main overall findings of the programme in 2005:

- In the long term all the indicators, except for *Average number of significant events* and *Average rate of forced outages*, have shown a decreasing trend over the 10 years analysed. Last year's report pointed to an increasing trend by this last indicator in the last three years, this having now led to a change in the long-term tendency, further accentuated by the outage at Vandellós II.
- In the short term also, a decreasing or stable trend may be observed for all the indicators except those mentioned above. However, in no case was considered necessary to undertake special tracking of the evolution of the indicator.

Table 2.1. Summarises the operating data for the nuclear power plants in 2005.

Thirty-nine events were reported, a similar number to the one registered in 2004, two of which were classified at level 1 on the International Nuclear Events Scale (INES). The rest were classified at level 0, although, as mentioned in last year's report, one of the events provisionally classified as level 1 in 2004 was reclassified at level 2.

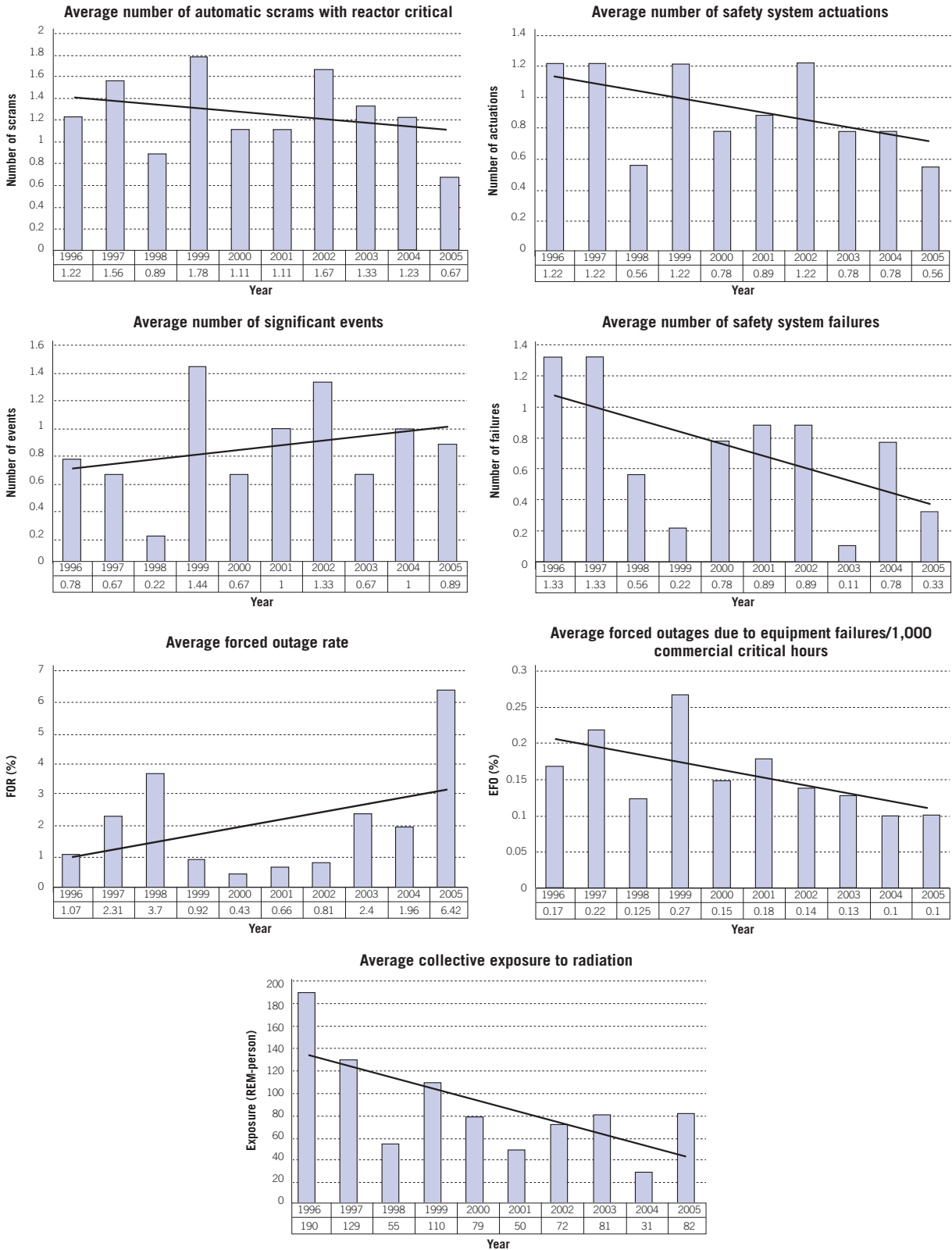
The events classified at level 1 were the result of anomalies in the authorised operating regime that,

although not having a significant impact, revealed the existence of deficiencies in safety-related aspects that overstep the aforementioned regime and consequently needed to be corrected, such events not having any significant radiological impact on or off-site. The event classified at level 2 was an incident involving significant failures of safety arrangements but in which a sufficient defence in depth persisted to respond to additional failures.

The event initially classified at level 1 and subsequently classified at level 2 on the INES scale was the event that occurred at the Vandellós II plant on August 25<sup>th</sup> 2004, involving the rupturing of a manhole on train B of the essential services water system. In this event important deficiencies were observed in the management practices of the licensee, which led to problems of generalised corrosion identified over several years in in-house inspections and affecting both trains of the system not being corrected, to insufficient importance being given to leakage identified in May, prior to the breakage, in the same manhole as would later rupture on August 25<sup>th</sup> during the start-up of system pump B, to repair activities for new cases of seepage identified in other parts of the system not being managed with adequate transparency, and to failure to submit an acceptable resolution plan to re-establish the levels of safety of the nuclear power plant. A fundamental failure was the fact that the hydraulic test of the system, duly included in the procedures and foreseen in 1999, was not performed.

The Incident Review Panel (IRP) in charge of analysing and classifying each event depending on its repercussion for safety and its generic nature, i.e., whether or not it is a problem potentially affecting several plants, considered the 39 events reported, classifying eight of them as being potentially significant and one as being potentially generic. An event is classified as being potentially significant if subsequent tracking of the corrective measures implemented is considered necessary or if it might imply a request for measures additional to those proposed by the licensee.

**Figure 2.1. Nuclear power plant operating indicators**



**Table 2.1. Summary of nuclear power plant data for 2005**

	José Cabrera	Almaraz I/II	Ascó I/II	Vandellós II	Trillo	Garoña	Cofrentes
Permit in force	14-10-02	08-06-00 08-06-00	02-10-01 02-10-01	26-07-00	16-11-04	05-07-99	19-03-01
Validity (years)	3.5 30-04-2006	10/10	10/10	10	10	10	10
Number of inspections	23	21	26	53	28	28	32
Production (GWh) I/II	1,161.267	7,823.318 8,536.655	8,019.44 7,762.06	4,896	8,642.525	3,680.38	7,029.750
Thermal power (MW)	510	2,729 2,729	2,952.3 2,952.3	2,940.6	3,010	1,381	3,237
Output (MWe)	160	980 984	1,032.5 1,026.25	1,087.1	1,066	446	1,096
Refuelling outage I/II	05-02-2005 05-03-2005	30-03-05 23-04-05 (U-I) No outage in 2005 (U-II)	No outage (U-I) 30-09-05 04-11-05 (U-II)	15-03-05 03-09-05	29-04-05 23-05-05	27-02-05 30-03-05	15-05-05 03-08-05
Emergency drill	16-05-05	06-10-05	14-04-05	20-10-05	23-06-05	24-11-05	03-11-05
Supervisors	13	22	29	15	16	16	13
Operators	15	30	32	20	16	15	22
MRPS	3	2	4	3	2	1	4
Sanctions proceedings/ cautions				1 sanctions proceeding			1 caution
Reported events	4	3 (U-I)	5 (U-I) 5 (U-II)	7		4	8

The most relevant generic issues in 2005 were as follows:

- Rupturing as a result of generalised corrosion of the manhole of the essential services water system, the origin of which was analysis of the Vandellós II event, with respect to which the CSN issued a Technical Instruction.
- Potential clogging of containment sump filters at PWR plants, the origin of which was the new requirements issued by the country of origin of the plant design, USA, the CSN issuing technical instructions on compliance with these requirements in 2003 and 2004. In this respect inspections were performed and the on-going activities and the new generic documentation developed in the USA were tracked.
- Habitability of the control room, also as a result of new standards issued in the USA in 2003. The sector is jointly addressing compliance with these standards, with the performance of analyses and tests. This programme will run until 2007 and the CSN will perform inspections to determine compliance.

## 2.1.2. Inspections, reports, warnings and sanctions proposals

During 2005 the CSN, in complying with its nuclear facilities control function, carried out a total 211 inspections, 51 decisions on authorisations, 22 favourable reports, 7 technical instructions and no temporary exemptions from compliance with the Operating Technical Specifications.

The following were particularly significant among the more important issues:

- Issuing of five technical instructions to all the plants in relation to analysis of the applicability of the Vandellós II event in each case, from the technical and organisational points of view, this referring to generalised corrosion of the essential services water system manhole.
- Approval of the revisions of the operating regulations of the Santa María de Garoña, Ascó and Vandellós plants.
- Authorisation of the site emergency plan revisions of the José Cabrera, Santa María de Garoña, Almaraz, Ascó, Cofrentes and Trillo plants.
- Authorisation of the revisions of the Safety Analysis Reports of the Santa María de Garoña and Trillo plants.
- Authorisation of extensions to the nuclear materials security authorisations of the José Cabrera, Santa María de Garoña, Almaraz, Ascó, Cofrentes and Trillo plants.
- Favourable appreciation of the summary report on the design modification of the Individualised Temporary Storage (ITS) facility at José Cabrera NPP.
- Authorisation for three design modifications at Cofrentes, relating to the Giralda methodology for the design and evaluation of refuelling outages, implementation of the alternative full-scope source term and loading, operation in the reactor and storage of irradiated fuel, corresponding to the fuel to be loaded during the 15<sup>th</sup> refuelling outage.
- Monitoring of adequate compliance with the safety management Action Plan, motivated by the essential services water system deterioration incident at Vandellós II NPP.
- Favourable appreciation, with conditions, of the cost-benefit analysis performance plan relating to the design modification allowing for bleed and feed of the primary circuit.

The CSN decided to issue a warning to Cofrentes NPP for non-compliance with the Operating Technical Specifications, this consisting of exceeding by seven months the time limit allowed for the performance of the primary containment and dry well integrated leak tests.

The CSN decided to propose to the Directorate General for Energy Policy and Mines that sanctions proceedings be initiated against Vandellós II NPP, in relation to the incident affecting the essential services water system, for its having presumably committed three serious infringements typified in article 91 b) 1, 2, 4 and 6 of the Nuclear Energy Act.

## 2.1.3. Safety improvement programmes

The safety improvement programmes in which significant progress was made during 2005 were carried out in three major groups: Troubleshooting programme: Sanctions programme; Organisational and human factors safety assessment and improvement programmes and specific inspections.



### **Troubleshooting programme: Sanctions programme**

One of the tasks defined within the framework of the *Regulatory process improvement* programme was adoption by the licensee of a solid system for the identification of deficiencies and the establishment of corrective actions, the development of which was commissioned to a working group made up of representatives of the nuclear power plants and the CSN. The activities of this group began in 2003 with the drawing up of the *Guideline for the self-assessment programme* and the *Guideline for the corrective actions programme*, which were to be used for the development of procedures specific to each plant for performance of the self-assessment and corrective actions (CAP) programmes.

During 2005, a series of promotional activities was initiated in this respect, with highly positive results. This was performed after checking, by means of inspections, that the implementation and application of the PAC's had reached the level expected.

The Ascó, Vandellós II, Trillo, Almaraz and Santa María de Garoña nuclear power plants currently have a PAC in place, and the Cofrentes plant put its PAC in operation in August 2005, this currently being in the initial phase of implementation.

### **Organisational and human factors safety assessment and improvement programmes**

The organisational and human factors safety assessment and improvement programmes were required of the nuclear power plants by the CSN as from the end of 1999 as part of the periodic safety reviews, the plants beginning to implement this type of programmes in late 2002. Complete implementation of a programme of this type requires some five years, as a result of which they are now beginning to reach sufficient maturity, although relevant potential for improvement still exists.

In 2005, as part of its basic inspections plan, within the framework of the Integrated Plant Supervision System (IPSS), the CSN inspected the degree of implementation of these programmes at the José Cabrera, Santa María de Garoña and Cofrentes nuclear power plants and the Juzbado fuel manufacturing facility.

By the end of 2005 a revision had been carried out on the documents establishing the technical capacity and minimum staffing requirements of each department of the Santa María de Garoña, Cofrentes and José Cabrera plants and the Juzbado fuel manufacturing facility organisations, as a result of changes to their respective operating regulations.

Although there were no significant changes in the staffing of the Spanish nuclear power plants, the following may be mentioned as being the most relevant activities carried out in 2005:

- Continued implementation of the labour force adjustment plan at Cofrentes and Trillo-Almaraz, initiated previous to this year.
- Revision of the activities associated with the significant reduction of the staff that will take place at the José Cabrera nuclear power plant as from its definitive shutdown on April 30<sup>th</sup> 2006, such that the transition be carried out in an orderly manner known and accepted by the workforce, in short, that it had no negative effect on management of the safety of the plant up to that date.

### **Specific actions at Vandellós II nuclear power plant**

Throughout 2005, the following have been carried out: the assessment, inspection and tracking of the action plans submitted by the licensee to resolve the organisational and management deficiencies identified as a result of the event that occurred in August 2004, when a

manhole ruptured in train B of the essential services water system, all requiring major efforts by the CSN.

From the point of view of human and organisational factors, the action plan approved in 2005 consisted of four major programmes integrating the different improvement actions: leadership and management or direction of the organisation, the organisational structure and human resources, the implementation and improvement of management processes and the definition of factors driving change. A fifth relevant dimension relating to the safety culture was included as one more of the actions of the management processes to be developed.

The CSN continues to carry out detailed supervision of the implementation of the licensee's action plan.

As a result of the analysis of this event, of the activities performed and of the resolutions of the Commission for Industry, Tourism and Commerce of the Spanish Congress relating to it, in September 2005 the CSN issued the five complementary technical instructions to all the other plants, for them to analyse the applicability of the event from the technical and organisational points of view. The CSN requested them to submit a report on the conclusions drawn and their analysis and on the lessons learned.

The general conclusion drawn by the licensees regarding this applicability analysis was that no relevant deficiencies requiring immediate actions were identified at any plant and that the analyses underlined the possibility of introducing certain improvements, which were already under way, or correspond to new items to be considered. They conclude that the projects and activities already initiated in recent years in the area of organisation and management provided adequate coverage for such problems to be addressed and that in no case

was any re-orientation of their programmes and policies required.

Following evaluation of the applicability analyses by the CSN, the licensees were required to submit in July 2006 a new revision of these analyses, extending the scope to include pending items and taking advantage of the opportunity to undertake a more in-depth review of the status of certain organisation and management issues dealt with following the Vandellós II events.

#### **Contractor control activities**

In 2005 two inspections were scheduled on the activities performed by the licensees for the control, supervision and acceptance of refuelling work carried out by outside companies (contractors).

The inspections were performed during the refuelling outage at Cofrentes and at Group II of Ascó. In the first of these cases no significant deficiencies were encountered in either the general systematic approach adopted or the in the cases sampled. In the second inspection improvement actions deriving from the Vandellós II action plan were identified, in relation to the need to reinforce the activities of the Quality Assurance Unit and to supervision of work in the field. Finally, certain contractors were identified for whom the plant had not updated or completed their evaluations of official approval for the tasks that they were performing.

#### **2.1.4. Systematic evaluation of operations.**

##### **Integrated Plant Supervision System (IPSS)**

In May 2004 the Council agreed to suspend the ESFUC programme and to undertake adaptation of the US NRC's Reactor Oversight Process (ROP) to the situation of the Spanish plants. The new programme for the systematic evaluation of plant operation is known as the Integrated Plant Supervision System (IPSS).

In accordance with the working plan approved by the Council, the pilot phase of application of the IPSS started in July 2005, for a period of six months; the phase of implementation at all the Spanish plants except José Cabrera will continue throughout 2006.

The IPSS contemplates the systematic assessment of the operation of the plants using risk informed techniques, especially in the area of nuclear safety, and is structured around strategic areas and pillars of safety that are ordered logically and oriented towards compliance with the mission of the regulatory body. There are three strategic areas: nuclear safety, radiation protection and security, seven pillars of safety linked to the strategic areas, including the essential safety-related aspects of operation of the facility, and three transverse areas common to the seven pillars: human factors, safety culture and the problem identification and resolution or troubleshooting programme. The achievement of satisfactory results for the seven pillars of safety provides a reasonable guarantee that the mission of the regulatory body is being fulfilled.

The process of supervising the plants begins with the acquisition of information from two sources: the 18 operations indicators, reported quarterly to the CSN by the plants, and the inspections, which are performed for a variety of reasons. The process continues with the evaluation of this information – values of the indicators and findings of inspections – and its subsequent classification in colour bands depending on the seriousness of the deficiencies detected. This evaluation serves to establish five levels of intervention by way of a matrix of actions from best to worst, on the basis of safety significance. Each level of evaluation corresponds to levels of public information and CSN response to the licensee to correct the situation. This response is gradual and proportional to the safety significance of the licensee's behaviour, and contemplates meetings at different levels between

the management of the regulatory body and the licensee, surveillance and new inspections and other actions. Likewise, for such cases the CSN may make use of its enforcement and sanctions faculty, depending on the results of the inspections and events that have occurred.

Throughout 2005 the basic tools of the IPSS were developed in detail, at the level both of criteria and procedures and of data-processing applications for the handling of the necessary information. Certain aspects of the IPSS had not yet been defined at the end of the year, such as for example communication to the public of the results of the programme. The implementation phase will continue in 2006, including whatever adjustments to the programme might be required. It is expected that the programme will be fully applied as from January 1<sup>st</sup> 2007.

Also defined were the operations indicators and the thresholds for establishment of the different levels of safety significance in each case (green, white, yellow and red). The quarterly evaluations of plant performance corresponding to the two last quarters of 2005 were carried out, the conclusion being that it was not necessary to adopt any additional measure at any of the plants (Vandellós II has established a special tracking programme as a result of the essential services water system event).

A methodology was being developed for the CSN to perform an annual self-assessment of programme development and request the opinion of the plants, also annually, for incorporation into the programme of whatever improvements might be considered appropriate.

#### **Basic inspection programme**

This programme, adapted to the new IPSS supervision system, saw a 100% degree of compliance in 2005. The total number of inspections performed at nuclear facilities during the year was

211, 153% of those scheduled, this representing an effort of 47,434 hours of inspection. A high percentage of the non-scheduled inspections was dedicated to the Vandellós II plant, due to the special situation of this facility.

## 2.2. Fuel cycle facilities, waste disposal and research centres

In 2005 the CSN performed 38 inspections and issued 10 decisions, 7 favourable appreciations, two temporary exemptions from compliance with technical specifications, no technical instructions, no sanctions proceedings and two warnings in relation to cases of non-compliance identified during inspections carried out at Ciemat.

During this period the CSN was informed of two events, both at Ciemat. One related to the appearance of a projectile during the excavation of a trench for the installation of a new water network and the other to the activation of smoke detectors in the isotopes laboratory as a result of a minor fire. Neither of these events had any repercussion for persons or the environment.

The following may be underlined among the most important proceedings:

- Authorisation of the Radiation Protection Services at Juzbado and El Cabril.
- Authorisation of extensions to the Authorisation on the security of nuclear materials for Juzbado, El Cabril and Ciemat.
- Authorisation of Juzbado safety study reviews.
- Favourable report on the request by Juzbado for temporary exemption from the specifications for extension of the period of inoperability from 48 to 96 hours in relation to one of the two climate control units in the PWR sintering area, the aim being to undertake repairs to the

cold battery of this area, caused by the entry of air at very low temperatures, and for extension of the period of inoperability of one of the liquid effluent treatment system regulating pools.

- Favourable report on the Programme for performance of the Juzbado Integrated Safety Assessment (ISA).
- Favourable report on revision of the Juzbado *Radiation protection manual*.
- Authorisation for the declassification of the organic solution contained in a tank at El Cabril.
- Favourable report on declassification of the organic solution contained in a tank at the Quercus facility.
- Approval of the revision of the Ciemat *Site emergency plan*.
- Authorisation for the dismantling of Ciemat installations shut down and in the decommissioning phase (*PIMIC-dismantling*).
- Authorisation for the Ciemat Radiation Protection Service.

### Juzbado

Assessment of the adaptation of the effluents methodology and Environmental Radiological Surveillance Plan to the nuclear power plant model continued during 2005, and the periodic safety review for the Juzbado fuel manufacturing facility was received by the CSN as part of the support documentation for authorisation renewal application.

### El Cabril radioactive waste disposal centre

During 2005 this facility received 3,909 waste packages or containment units (2,373 from

nuclear facilities and 1,536 from radioactive facilities) and 16 samples of low and intermediate level radioactive wastes from nuclear facilities.

#### Quercus uranium concentrates manufacturing plant

The activities carried out at the Quercus plant during 2005 were limited to preparation for the forthcoming dismantling of this facility, including the treatment of liquid effluents (cutting water and spillover from the tailings dyke) for conditioning and release, as well as to the maintenance of these sections.

On July 7<sup>th</sup> 2005, Enusa, the plant licensee, requested authorisation for dismantling of the plant from the Ministry of Industry, Tourism and Commerce. Since that date, the CSN activities have centred on evaluation of the documentation submitted in support of the application for dismantling.

#### Centre for Energy-Related, Environmental and Technological Research (Ciemat)

The following may be singled out as actions performed during 2005 within the framework of the *Integrated plan for the improvement of Ciemat installations* (PIMIC), which contemplated various decontamination and dismantling activities in disused installations and decontamination and rehabilitation tasks in those areas of the centre that might present levels of contamination in excess of those acceptable for the performance of conventional activities not subject to regulation:

- Continuation of the radiological characterisation of areas of the centre pending rehabilitation. As of the end of 2005, Ciemat had concluded rehabilitation activities in 14 of the 24 areas included in the rehabilitation project and work continued on the remaining areas.
- Ciemat request to the Ministry of Industry, Tourism and Commerce for a *declaration of de-*

*commissioning* for installation IN-03, research reactor fuel assembly development plant, following completion of the dismantling works performed at this installation in accordance with the dismantling plan approved by the Nuclear Safety Council in 2002.

- Resumption of dismantling activities in installation IN-04, *metallurgical hot cells*, in accordance with the plan approved by the CSN in 1993, the objective being the unconditional release of this installation for the building to be used for non-regulated applications.
- Continuation of the surveillance and control programme for the non-operative nuclear and radioactive facilities pending decommissioning at the centre, included in the project PIMIC-Dismantling, (IN-01 *Experimental reactor JEN-1*, IN-07 *Storage of liquid radioactive wastes RAA-MTR*, IR-16 *Conditioning of liquid radioactive wastes* and IR-18 *M-1 Plant*).

Furthermore, work continues on the evaluation of the revision of the Ciemat *Radiation protection manual* submitted by the licensee to adapt to the new *Regulation on protection against ionising radiations* (Royal Decree 783/2001 of July 6<sup>th</sup>). During the course of the year the CSN requested additional information from the licensee and clarification regarding certain points covered in the information provided.

Three new supervisor licences and one operator licence were awarded, all for the centre's radioactive installations.

## 2.3. Radioactive facilities

### 2.3.1. Operation

The radioactive facilities for scientific, medical, agricultural, commercial and industrial purposes have operated within the safety standards estab-

lished, without any occurrence of any situations of undue risk for persons or the environment.

At present a total 1,323 radioactive facilities are authorised to operate (one 1<sup>st</sup> category facility, 1,009 2<sup>nd</sup> category and 313 3<sup>rd</sup> category). Likewise, the Nuclear Safety Council knows of 25,222 radiodiagnosis facilities included on the corresponding registers of the Autonomous Communities.

As of December 31<sup>st</sup> 2005, the following Autonomous Communities had executive competence over 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> category radioactive facilities: Asturias, the Balearic Islands, the Canary Islands, Cantabria, Catalonia, Castilla-León, Ceuta, Extremadura, Galicia, La Rioja, Madrid, Melilla, Murcia, Navarre, the Basque Country and Valencia.

As regards licensing activities, 357 decisions referring to radioactive facilities were issued in 2005.

The generic activities performed by the CSN during 2005 were as follows:

- *Complementary technical instructions* issued to all the authorised gammagraphy facilities, reiterating the one sent in 2004 and requiring that mobile gammagraphy operations be performed by operators accompanied by at least one assistant.
- *Complementary technical instruction* to all authorised Co-60 gammagraphy facilities for work to be performed inside shielded enclosures with safety systems meeting the requirements of CSN *Safety guide 5.14*. Likewise, work to be performed outside the premises of the facility should be reported to the CSN with at least seven days notice.
- *Circular* to all authorised non-encapsulated source facilities for them to undertake the management of solid waste materials with ra-

dioactive contents in accordance with Ministerial Order ECO/1449/2003 and CSN Safety guide 9.2.

- *Circular* to all authorised industrial gammagraphy facilities for updating of their data contained in the National Dosimetry Bank.
- Test application of the INES scale continued for the classification of events at radioactive facilities in Spain, along with application of the INES scale additional guideline of May 26<sup>th</sup> 2004 to events in transport and at radioactive facilities. CSN experts participated in drawing up of the latter as members of the corresponding working group set up by the IAEA.
- The CSN participated in an interministerial group led by the Ministry of Industry, Tourism and Commerce that drew up a draft Royal Decree for transposition to the national regulations of the Directive on the control of sealed radioactive sources and stray sources. As of the end of 2005, this draft Royal Decree was in the last phases of the arrangements prior to its approval.

#### **Industrial facilities**

Work continued on the action plan initiated in 2001 and aimed at reducing the doses of the personnel operating mobile industrial gammagraphy installations, a sector that required special attention. In this respect, mention should be made of the following:

The CSN continued its control of unused radioactive materials and equipment, urging the companies to manage the removal of equipment that was in storage for long periods in accordance with the regulatory requirements and to undertake the corresponding tracking.

#### **Medical facilities**

It should be pointed out that as a result of new technological developments there were at the end



of 2005 ten cyclotrons with an operating permit and one in the licensing process. The activity of these cyclotrons consists of producing very short-lived positron emitting isotopes and of subsequently synthesising the corresponding radio-pharmaceutical, mainly deoxyfluoroglucose labelled with Fluor 18 (FDG), for use in diagnosis in nuclear medicine by means of positron emission tomography (PET).

There are currently 169 linear accelerators for external radiotherapy in Spain, 12 of which were licensed in 2005. The upward trend in the number of applications for this type of equipment continues, among other things as a result of the campaign initiated in 1996 for the progressive replacement of teletherapeutic units with cobalt. Among these is a *Tomotherapy* system that consists of a linear accelerator integrated on a *Helicoidal TAC* platform that allows for treatment guided by images in real time.

In compliance with a resolution by the Commission for Industry, Tourism and Commerce, and within the framework of the activities of the permanent forum on radiation protection in the healthcare sector, in which the CSN participates, the Spanish Radiation Protection Society and the Spanish Society for Medical Physics are preparing jointly with the Ministry of Health and Consumption a guideline aimed at protecting children against the risks arising from exposure to ionising radiations for medical purposes.

#### **X-ray diagnosis facilities**

As regards X-ray facilities used for medical diagnosis, in 2005 the CSN continued to receive dossiers for entry on the corresponding register, these coming from the competent industry authorities of the Autonomous Communities. Once incorporated in the corresponding database, these dossiers were reviewed.

During 2005 some 18,000 annual reports were received from the X-ray facilities, of which around 10% were reviewed. The selection criteria used for this review were as follows: continued review of those facilities that had been reviewed in previous years and had presented some type of deficiency, of medium-sized and major hospital facilities, of private institutions possessing a large number of items of equipment, of centres with haemodynamic, vascular or scanning installations and of veterinary clinics.

An X-ray facility inspection programme was performed in 2005 aimed at ensuring a crossed-control between these facilities and the radiation protection technical units (RPTU's) serving them. The facilities selected for this purpose came from among general radiodiagnosis installations not attended by a Radiation Protection Service and those dedicated to veterinary diagnosis. In addition, consideration was given for the first time to the dental radiodiagnosis facilities included on the register, for tracking of those RPTU's that provide services only to this type of installations.

As a result of this programme, and in compliance with resolution 24 of the Commission for Economy and Inland Revenue of the Spanish Congress, of October 9<sup>th</sup> 2002, which states as follows: "*include X-ray facilities in the programmes for the inspection of medical radioactive installations*", during 2004, 205 inspections have been carried out at medical diagnosis X-ray facilities. Also, consolidated criteria were defined for the preparation of the inspection programmes.

It should be pointed out that the annual inspections performed at hospital radiation protection services include the indirect control of the operation of the radioactive and X-ray facilities of the hospitals themselves and of the X-ray facilities of the healthcare centres covered by this service

(healthcare centres, specialist centres and other hospitals).

### Commercial facilities

The control and tracking of the activities performed by radioactive facilities commercialising encapsulated and non-encapsulated radioactive materials and sources generating ionising radiations have been carried out, as in previous years, through the sales and supplies reports issued quarterly by such facilities, contrasted with the authorisations of the receiving radioactive installations and with the declarations of transfers of radioactive substances between Member States (Euratom regulation No 1493/93), as well as through control inspections performed at such facilities and the study of their annual operating reports.

Throughout 2005 there was an increase in the number of awards to and installations of linear electron accelerators, while the installation and sale of telegammatherapy units decreased. Likewise, in the field of nuclear medicine it may be observed that Xenon 133 is no longer commercialised and used, having been replaced with Molybdenum 99/Technecium 99m.

The main commercialisation activity centres on inspection equipment (inspection of packages, electronic circuits, containers, packaging, etc.), the majority of such equipment having type approval. Also, although to a much lesser extent, equipment is commercialised for research and quality control and for materials analysis.

### 2.3.2. Tracking and control of facilities

Throughout 2005, 1,565 inspections were carried out at radioactive facilities. Of these, 828 were performed by the CSN staff, the rest being carried out by personnel accredited by the CSN and attached to the different Autonomous Communities

to which this function has been transferred: 307 in Catalonia; 25 in the Balearic Islands, 95 in Navarre; 86 in Valencia; 55 in Galicia and 169 in the Basque Country.

In 2005 the CSN received and reviewed 1,114 annual reports from radioactive facilities and 264 quarterly commercialisation reports.

Analysis of the reports drawn up during inspections, of the annual reports of the facilities, of the information on radioactive materials and equipment provided by the commercialisation installations and of the waste management data supplied by Enresa, gave rise to the issuing of 135 control letters directly by the CSN, 89 by the service in charge of this function in Catalonia and three by the service in the Basque Country, in relation to various technical aspects of the licensing and control of the facilities.

As regards control, mention should be made also of the response to complaints, of which there were 25 in 2005: two in relation to industrial facilities, two to medical facilities, 13 to radiodiagnosis installations and eight miscellaneous complaints. In most cases an inspection visit was made, the persons filing the complaints being informed of the condition of the facility and, where appropriate, a control letter being sent to the licensee.

### 2.3.3. Incidents and enforcement actions

During 2005 11 significant incidents were registered at 2<sup>nd</sup> and 3<sup>rd</sup> category radioactive facilities.

Proposals were made to the competent industry authority regarding the initiation of four sanctions proceedings by the CSN, seven by the Regional Government of Catalonia and two by the Basque Country, most of these relating to the performance



of activities without the required authorisation, operation of facilities by non-licensed personnel and non-compliance with instructions and requirements imposed.

Likewise, as a result of facility evaluation activities and control inspections, 96 cautions were issued by the CSN, seven by the Regional Government of Catalonia and 38 by the Basque Country. The devi-

ations encountered were identified and the licensee was required to correct them within two months.

The operations of one industrial radioactive facility were suspended as a result of non-compliance with the corrective actions required by the CSN in its cautions. In addition, two fines were imposed, one on an industrial facility and the other on an unauthorised radiodiagnosis installation.

### 3. Service entities

The main services are: the Radiation Protection Services (RPS), the Radiation Protection Technical Units (RPTU), medical X-ray equipment sales and technical assistance companies and the External Personnel Dosimetry Services.

At present 63 radiation protection services are authorised, these rendering services to the licensees of the nuclear and radioactive facilities. In 2005 there was one application for authorisation for the constitution of a new RPS, two for modifications and one for decommissioning. Reports were issued on the two modifications and one case of decommissioning. Likewise, two cautions were issued for cases of non-compliance.

During this period 22 inspections were carried out: 15 by the CSN, four by the competent authority in Catalonia, one by the Basque Country and two by the competent authority in Navarre.

The CSN performed a study to gain insight into the staffing of the RPS's and their degree of coverage of the radioactive facilities of the public health system. This study showed that there were healthcare centres with an authorised RPS in all the autonomous communities except Castilla-La Mancha.

In July 2005 Nuclear Safety Council Instruction IS-08 on *Criteria applied to demand specific consultancy on radiation protection from the licensees of nuclear and radioactive facilities* was published in the Official State Gazette.

As a result of this study and of the aforementioned instruction, the CSN has required in writing the setting up of radiation protection services at 8 public healthcare centres, 4 private healthcare centres and 2 research centres.

Of the 47 authorised radiation protection technical units, 22 provide services only in relation to radiodiagnosis facilities, the control of these installations being accomplished through inspections and periodic reports. In 2005 17 inspections were performed, 13 by the CSN and four by the competent authority in Catalonia. There was a request for a new RPTU and another for the transfer of radioactive material to Enresa. One authorisation report and one transfer report were issued. There was one complaint, seven cautions were sent and two fines were imposed.

During its meeting held on March 9<sup>th</sup> 2005, the CSN agreed to approve the measures proposed in a *Programme of activities for improved RPTU actions*, which includes CSN interventions with respect to the RPTU's, the licensees of the facilities served by them and the regulatory activities themselves.

As regards tracking and regulatory control of the Personal Dosimetry Services authorised by the CSN, mention may be made of the fact that during 2005:

Seven control inspections were carried out on authorised Personal Dosimetry Services; in all cases complementary technical instructions were issued to the licensees with a view to improving the operation of the services.

The final report was drawn up on the 1<sup>st</sup> comparative campaign organised by the CSN to determine I<sup>131</sup> in the thyroid, following analysis of the results obtained by the Internal Personal Dosimetry Services of the Spanish nuclear power plants and Tecnatom.

The CSN has continued to participate, within the framework of the Radiation Protection Healthcare Forum Group, in drawing up a protocol on dosimetric surveillance by area monitoring of category

B professionally exposed workers in the healthcare sector.

The protocol drawn up jointly by the Ciemat Internal Personal Dosimetry Service and the CSN for validation of the technique used by Enusa-Juzbado for the measurement of uranium in urine samples has been subject to tracking.

Review of Safety Guide 7.1, *Technical and administrative requirements for Personal Dosimetry Services*, has been completed.

As of December 31<sup>st</sup> 2005 a total 817 companies were included on the external companies register, the vast majority of these performing activities in relation to the nuclear power plants.

### **Personnel licences**

In order to ensure the protection of persons and the environment and the safe operation of nuclear and radioactive facilities, licences are issued for both the facilities themselves and the people who are to work in them. The CSN grants facility supervisor and operator licences and diplomas for the heads of radiation protection services, with a period of validity of five years.

As of December 31<sup>st</sup> 2005, the number of workers holding a licence or diploma amounted to 10,110. In addition, 34,570 workers held CSN accreditation to manage medical radiodiagnosis facilities and 48,654 to operate such installations.

The specialist training for people working at radioactive facilities is delivered fundamentally by way of courses standardised by the CSN.

## 4. Radioactive waste

During 2005, the CSN undertook control of the inventory of spent fuel assemblies, high level radioactive waste in storage and operation of the temporary storage facilities existing in Spain. Likewise, the Council continued to carry out the activities required for compliance with its obligations deriving from international commitments and studies for definition of the regulatory framework of the additional installations foreseen for the longer-term management of spent fuel and high level wastes, in accordance with the situation summarised below and the forecasts of the 5<sup>th</sup> General Radioactive Waste Plan (GRWP) currently in force, approved in 1999.

The spent fuel generated at the Spanish nuclear power plants is currently in temporary storage in the pools associated with the design of each and in the individualised temporary cask storage (ITS) facility at the site of the Trillo plant. The only exception to the above is the fuel generated up to 1983 at the José Cabrera and Santa María de Garoña plants, which was sent to Great Britain for reprocessing, and all the fuel generated during the operation of the Vandellós I nuclear power plant, which was sent to France, also for reprocessing.

In accordance with article 28 of the *Regulation on nuclear and radioactive facilities* (RNRF), the definitive shutdown of the José Cabrera nuclear power plant in April 2006 for dismantling demanded the need to unload the fuel from the pool prior to dismantling or to have a plan for the management of this fuel.

Following a basic strategies study by Enresa, contemplated in the type Unesa-Enresa contract for radioactive waste management and dismantling, the solution adopted for storage of the fuel from the José Cabrera plant is the construction of an in-

dividualised storage (ITS) facility on the plant site.

The process of licensing of the José Cabrera ITS facility consists of two parts: approval of the storage system itself, for which Enresa is responsible, and the part corresponding to the storage installation, organised by the plant licensee, Unión Fenosa Generación.

It will be in the year 2010 that other facilities additional to those mentioned above will be required for the temporary storage of the high level wastes that will be returned from France, corresponding to Vandellós I, of other wastes that in view of their activity cannot be sent to the El Cabril low and intermediate level waste disposal facility and for the storage of the spent fuel as the pools of other plants become saturated and the need arises. The solution foreseen is a centralised temporary storage (CTS) facility, although other solutions cannot be ruled out.

As regards the definitive management of irradiated fuel and high level waste, the solution considered in the different waste management plans is deep geological disposal, although no decision will be taken in this respect until the year 2010, the feasibility of separation and transmutation (S&T) processes currently being under study. Nevertheless, the capacity of the spent fuel storage pools associated with the nine operating reactors is sufficient to cover the requirements until 2010.

In view of the current situation, the CSN activities during 2005 consisted fundamentally of the following:

1. Control of the inventory of spent fuel and other components in storage and control of the operating conditions of the nuclear power plant fuel storage pools and the individualised temporary storage (ITS) facility at the Trillo plant.

2. Monitoring and control of the manufacturing of the Ensa-DPT type metallic casks.
3. Evaluation for approval of the individualised temporary storage (ITS) facility foreseen for the José Cabrera nuclear power plant, based on the use of ventilated steel-concrete casks of the HISTORM 100Z type.
4. The technical-administrative activities corresponding to assessment of the safety case for the generic design of a centralised temporary storage (CTS) facility, in accordance with the request from Enresa.
5. Tracking of standards developments, technological progress and research at international level in relation to the safety of long-term management of spent fuel and high level waste and communication to different target audiences, through active participation in international forums and other regulatory bodies.
6. Tracking of Enresa developments for the medium/long-term management of spent fuel and high level wastes, by means of periodic meetings.
7. The performance of in-house studies allowing for the future assessment of solutions to be presented by Enresa in relation to the management of spent fuel and high level waste.

In addition, work was performed on preparing our contribution to the Second national Report on the Joint Convention on safety in spent fuel management and safety in the management of radioactive wastes, as well as tracking of and participation in national and international programmes.

As regards the management of low and intermediate level radioactive waste, during 2005 the CSN undertook control of the management of ra-

dioactive waste in each of the phases involved: handling, treatment, conditioning, temporary storage, transport and disposal.

The year 2005 saw the culmination of the activities of the working group formed by representatives of the CSN, the Spanish Electricity Industry Association (Unesa), the radioactive waste management agency (Empresa Nacional de Residuos Radiactivos - Enresa) and the company Enusa Industrias Avanzadas S.A with the objective of establishing the contents and scope of the 6<sup>th</sup> Radioactive Waste Management Plan.

Finally, as regards very low level waste, 2005 saw the removal of 163 radioactive lightning rods, as a result of which the total number of such rods removed to date amounts to 22,264 (including 92 static electricity elimination sources counted as lightning rods and not counting those that were discarded due to their not being radioactive, because of duplicity, etc.). No sources of Americium-241 arising from disassembly were sent this year to Great Britain, the total number of such sources sent to date consequently amounting to 59,796. Enresa estimates that there might be other lightning rods for which requests for removal have not been received and that, as a result, have not been located to date.

#### **Management of declassified waste**

From the point of view of regulatory control, the management of very low level radioactive wastes is based on determining the safety and radiation protection conditions to be applied to such wastes depending on the radiological risk for persons and the environment.

The analysis of potential radiological risk makes it possible to determine which very low level radioactive wastes may be managed using conventional routes already implemented by society for wastes of a similar nature (declassification) and which others require specific controlled man-

agement in keeping with their radiological risk, without compromising unnecessarily the limited disposal resources available for low and intermediate waste.

Throughout 2005 the CSN continued the process of developing this system for the declassification

of very low level waste, initiated in 1999 by means of complementary technical instructions requiring the licensees of the nuclear facilities to draw up a specific programme of actions, technical studies and the preparation of requests for authorisation by the Ministry for such wastes to be managed using conventional routes.

## 5. Facilities in the dismantling and decommissioning phase

### Vandellós I Nuclear Power Plant

The Vandellós I nuclear power plant Dismantling and Decommissioning Plan contemplates three periods or phases. Completion of the first of these phases has left the unloaded reactor shroud, along with its internal structures and control systems, in a period of waiting and decay known as the dormancy phase.

During 2005 the CSN continued its tasks of controlling and inspecting the declassification of the few radioactive materials that still remained at the facility.

The CSN continued with its assessment of the *Site restoration plan* submitted by Enresa with a view to releasing a part of the original site of the facility.

### José Cabrera dismantling plan

In accordance with the Ministerial Order ECO/2757, of October 14<sup>th</sup> 2002, the definitive shutdown of the José Cabrera nuclear power plant was scheduled for April 30<sup>th</sup> 2006.

The process of dismantling the José Cabrera nuclear power plant will be undertaken in accordance with the requirements of the Regulation on Nuclear and Radioactive Facilities (RNRF). Following shutdown of the plant, the owner, Unión Fenosa Generación (UFG), will continue to be the licensee for the period of preparatory activities for dismantling, ownership subsequently being transferred to Enresa for the performance of dismantling, in compliance with the general radioactive waste plan currently in force.

The phases of licensing established by the RNRF for the dismantling and decommissioning of nuclear facilities begin with the declaration of de-

finite shutdown and continue with granting of the dismantling permit.

The declaration of definitive shutdown will give rise to the first activities on completion of the operating phase and will be issued prior to April 30<sup>th</sup> 2006, the date foreseen for shutdown of the plant.

The following documents have been submitted for approval by the CSN in relation to the declaration of definitive shutdown of the José Cabrera nuclear power plant:

- A plan of activities in preparation for dismantling, containing a description of the activities that will be carried out at the facility following definitive shutdown.
- An analysis of the risks of the facility in its new situation of definitive shutdown, as well as of its evolution, on the basis of the activities scheduled for this period prior to the transfer of ownership.

These activities are reflected in the shutdown safety study submitted with the rest of the official documentation, and are fundamentally the following:

- Decontamination of systems: reactor coolant system, residual heat removal system and chemical and volume control system.
- Tagging out of systems in order to leave them available for dismantling.
- Radiological characterisations allowing for the determination of future decontamination actions.
- Elimination of conventional risks: removal of oils, fuels, etc.
- Conventional dismantling activities.
- Adaptation of systems and infrastructures.

### **Elefante uranium concentrates manufacturing plant**

On October 26<sup>th</sup> 2005 the Nuclear Safety Council approved the proposed *Programme of surveillance of groundwaters and stability of covering structures*, this initiating the so-called period of compliance contemplated in the dismantling plan immediately following completion of the restoration and stabilisation of the tailings.

The results obtained during the year for environmental radiological surveillance are contained in the section corresponding to the Quercus plant since, due to their being located on the same site, both facilities share the same Environmental Radiological Surveillance Programme (ERSP) and a single groundwaters surveillance and control programme.

The Elefante plant was in the phase of surveillance prior to the declaration of decommissioning, and no liquid radioactive effluents were produced during 2005.

### **Andújar uranium mill (AUM)**

Four inspections were performed during 2005 in order to verify the general, hydrological, geological and environmental radiological surveillance conditions imposed by the surveillance and maintenance plan for the site's period of compliance. Likewise, an inspection was performed to check the scope of the effects produced by the activities of burrowing animals. No significant devi-

ations were identified with respect to the programme established.

The licensee submitted to the CSN a new surveillance and maintenance plan for the restored site of the AUM, in compliance with the requirements of the authorisation in force. This is being evaluated by the Nuclear Safety Council.

The facility carried out an environmental radiological surveillance programme in 2004, the results of which are the latest available. Approximately 75 samples were taken and around 600 analyses and 99 measurements of radon exhalation were performed.

### **La Haba Lobo-G uranium ore treatment plant**

Two inspections were performed at this site during 2005 to verify the conditions imposed in the decommissioning Order. No significant deviations were found with respect to the programme established at either facility.

### **Arbi research reactor**

The Arbi reactor was located in Bilbao, at the J. L. Torrontegui e Ibarra (Labein) Industrial Research Testing Laboratories. During 2005 an inspection was performed at the facility and, following a favourable report from the Nuclear Safety Council, its decommissioning was declared by the Order of the Ministry of Industry, Tourism and Commerce of June 17<sup>th</sup> 2005.



## 6. Transport, nuclear and radioactive equipment and activities not subject to the nuclear legislation

### Transport

In accordance with the regulations in force, which require the authorisation or notification of transport operations depending on the risk of the contents and validation of the transport package model (adequate for the technical characteristics of the material), in the year 2005 the CSN reported on three authorisations for transport. Two of these were for the transport of non-irradiated fuel assemblies from the Juzbado facility to different Spanish or European nuclear power plants, and one related to the transport of uranium oxide from BNFL in Great Britain to Juzbado in 2006.

Likewise, within the framework of control activities, 56 inspections specifically relating to transport were performed in 2005, 22 by the CSN itself, 33 by the services commissioned to do so in the autonomous communities and one in collaboration between the CSN and the commissioned entity in the autonomous community of Valencia. In 2005 the CSN reported on four requests for the validation of approvals for packages from abroad.

There were 48 dispatches of fissionable material in 2005. Important also was the transport by Enresa of radioactive wastes to its El Cabril facility, with a total 113 expeditions carrying wastes from nuclear facilities and 61 from radioactive installations.

There were nine events in the transport of radioactive material in 2005. Five of these were accidents during transport by road, none of which had any radiological consequences or implied damage to the transport packages affecting their safety.

In addition there were two thefts of radioactive packages involving forcing of the locks of the transport vehicles. The dispatching organisations reported these incidents to the State Security Forces but the packages have not been located. The CSN issued communiqués to the press warning the public of the possibility of radioactive packages being found. In both cases they were *excepted* type packages, i.e. with very limited radioactive material activity, as a result of which the risk was very low under normal and accident transport conditions.

Finally, there were two incidents during air transport operations. One was during the loading and unloading of several radioactive packages at the freight terminal of Barajas airport in Madrid, during which damage occurred to a type A package, giving rise to the spillage and loss of its internal container. This container was not located. However, no radioactive contamination was detected in the areas inspected, as a result of which it may be deduced that the integrity of the internal container was maintained during the incident. The other incident occurred during the transport or loading and unloading of two *Excepted* type packages, causing damage to one of the packages and loss of one of the internal vials. Given that the activity contained in this vial was lower than the exemption values established in the regulations, the incident did not imply any radiological risk.

The number of workers controlled was 90, the corresponding collective dose being 172 mSv.person.

If only workers with significant doses are considered, the average individual dose for this group amounts to 2.61 mSv/year, a percentage of 5.23% of the maximum annual dose permitted by the regulations. This dose was received fundamentally by workers involved in the transport of packages containing radiopharmaceutical materials to medical centres.

### Activities at non-regulated facilities

The management of unauthorised radioactive materials, arising fundamentally from practices dating back to before the beginnings of nuclear regulation in Spain, is performed usually through the removal of such materials by Enresa as radioactive waste. In 2005 the CSN drew up reports for 19 transfers to Enresa of various materials and radioactive sources. In 10 of these cases the requesting company or body was not the licensee of a facility. The authority commissioned in Catalonia drew up two of these reports, a further two were issued by its counterpart in the Basque Country and one was from the Balearic Islands.

No report was issued by the CSN during this period on the removal of sources of radium for medical use, sources that were formerly used in radiotherapy and that as a result of their dispersion – they were previously open to free use – and highly hazardous nature led to the introduction of the concept of confiscation without cost for the owners. Ciemat is responsible for such removals, following a report by the CSN.

As regards the removal of radioactive material detected in metallic materials within the scope of

application of the *Protocol on Collaboration in the Radiological Surveillance of Metallic Materials*, on January 1<sup>st</sup> 2005 a modification to the Technical Annex of the Protocol entered into force, the aim being to incorporate the experience acquired during its implementation. The Protocol is the reference framework for the radiological surveillance of metals destined for recycling in Spain, and establishes a series of commitments and activities to be undertaken by each of the signing parties in order to guarantee the radiological surveillance of metallic materials and the management of radioactive materials detected or that might be generated as a result of an accident.

As of the end of 2005 there were 106 facilities subscribing to the Protocol.

As a result of application of the Protocol, in 2005 the CSN was informed on 126 occasions of the detection of radioactivity in scrap materials. The radioactive sources detected were: indicators with radioluminescent paint, ion smoke detectors, radioactive lightning rods, products containing thorium and parts with artificial contamination, these being transferred to Enresa for management as radioactive wastes.

## 7. Radiation protection of the workers, the public and the environment

### 7.1. Radiological control of exposed workers

Article 6 of *Royal Decree 783/01*, approving the Regulation on Protection against Ionising Radiations, includes the principle of optimisation of radiation protection (the ALARA principle), according to which the doses received by workers exposed to ionising radiations must be kept as low as reasonably achievable, and in all cases below the dose limits established in this legislation.

The National Dosimetry Bank centralises the dosimetry records of the exposed workers of the Spanish nuclear and radioactive facilities. As of closure of the 2005 dosimetry year, there were records of a total of approximately 11,660,785 dosimetry measures, corresponding to some 238,700 workers and 40,370 installations. Each of these measures carried information on the type of facility and the type of work performed by the worker.

Also in accordance with the legislation in force, external companies (or contractor companies) whose workers run the risk of exposure to ionising radiations due to their intervening in the controlled zone are obliged to submit a declaration of their activities and figure for this purpose on a register set up by the Nuclear Safety Council. As in the case of the staff of the facilities, their workers must have a radiological work licence.

In 2005 a total 3,785 licences of this type were distributed among the workers of 169 companies.

In summarising the dosimetry data for 2005, it should be mentioned that the number of persons

exposed to ionising radiations and dosimetrically controlled in Spain in 2005 amounted to 92,768, with a collective dose of 52,491 mSv.person.

A significant fact that should be underlined is that, although the maximum regulatory effective dose value for professionally exposed personnel in any official year is 50 mSv:

- 97.26% of the dosimetrically controlled workers (90,228) received doses of below 6 mSv/year.
- 99.58 % of the dosimetrically controlled workers (92,375) received doses of below 20 mSv/year.

The following may be inferred from the distribution of collective and individual doses and the number of professionally exposed workers by sectors in 2005:

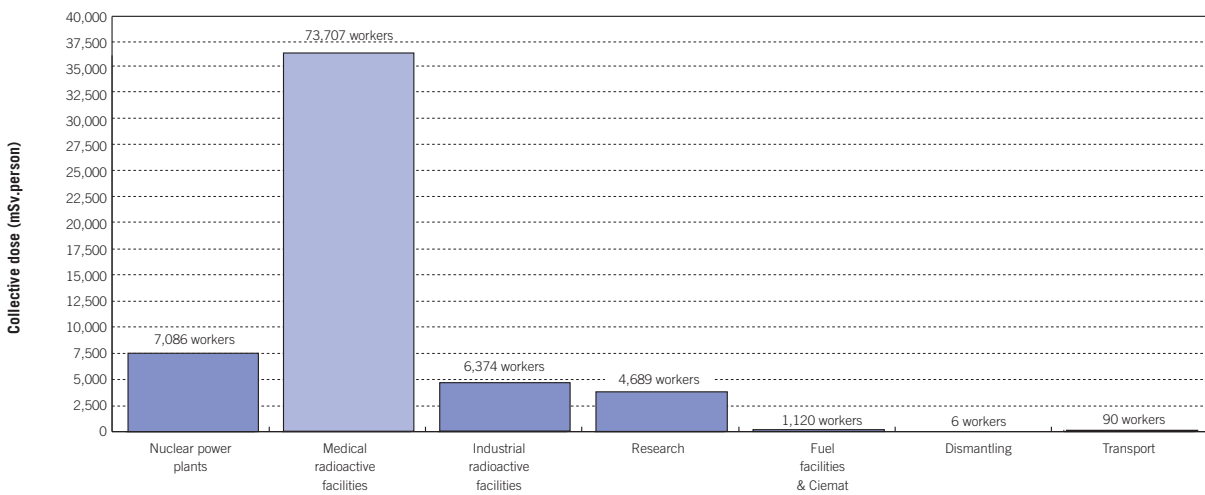
- The greatest contribution to the collective dose of professionally exposed workers corresponds to the medical radioactive facilities (36,454 mSv.person), which in turn are the most representative as regards the number of workers (73,707 persons, 79.45% of the total)
- As regards the average individual dose, the research and teaching facilities have shown the highest value (2.36 mSv/year). In this case it should be considered that 56% of the dose corresponds to an administrative assignment resulting from inadequate management in the changing of dosimeters, and that if these administrative doses were not taken into account, the value would be around 1,700 mSv.person and the average individual dose around 1 mSv/year.
- At the Spanish nuclear power plants, the CSN controlled a total 7,086 workers, with a resulting collective dose of 7,333 Sv.person and an average individual dose of 2.04 mSv/year. These

data may be considered positive, especially for pressurised water type reactors (PWR).

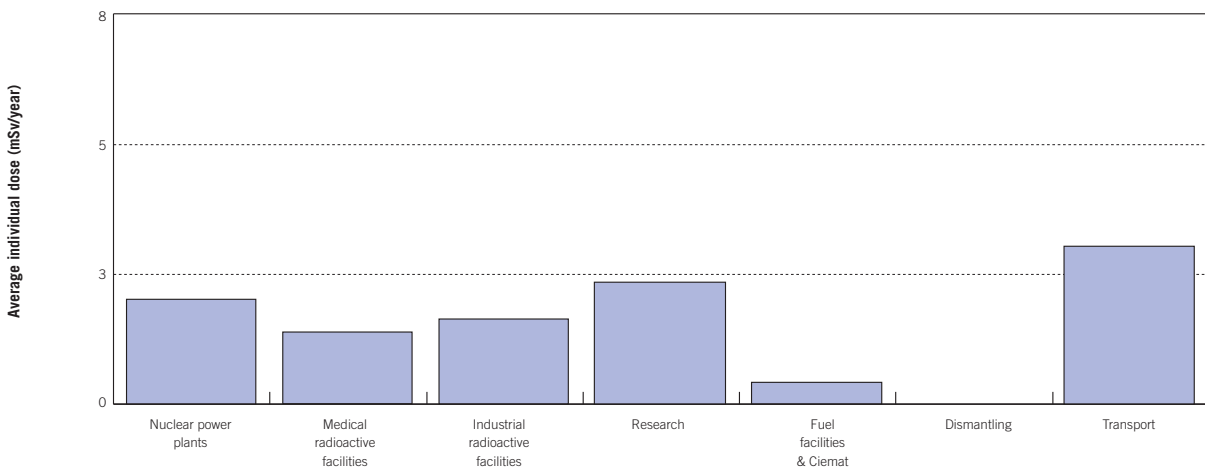
- In the transport sector, the average individual dose decreased significantly with respect to the previous year, and the collective dose for companies carrying out this activity is maintained.

In this case, the doses concentrate on the transport of radiopharmaceutical materials, due to the small number of companies performing these activities, the small size of the packages and the fact that loading was carried out manually. The CSN undertakes special tracking in this respect.

**Figure 7.1. Collective dose and number of exposed workers by sectors. Year 2005**



**Figure 7.2. Average individual dose, by sectors. Year 2005**



## 7.2. Control of releases and environmental radiological surveillance

Facilities having the potential to produce significant radioactive releases are subjected to administrative authorisations. In compliance with its regulatory function, the CSN establishes the systems for the limitation, surveillance and control of radioactive effluents at the installations and the requirements to be met by the Environmental Radiological Surveillance Programmes (ERSP) to fulfil the standards. The licensees of such facilities are responsible for the application of surveillance programmes, which are required to be suitable for the characteristics of each facility and its surroundings. The CSN verifies compliance by evaluating the results, periodic inspections and independent control programmes, either directly or by commissioning functions to the autonomous communities.

In the rest of the country the CSN has set up a national environmental radiological surveillance network (Revira) to watch over and maintain the radiological quality of the environment, which it operates in collaboration with other institutions. This network is made up of the following:

- The Network of Sampling Stations (REM), where surveillance is accomplished by means of sampling and analysis programmes including surveillance of the aquatic medium (continental and coastal waters) and the atmosphere and terrestrial medium, carried out by different laboratories.

The REM is in turn made up of two types of complementary networks:

- The Dense Network, with numerous sampling points forming a surveillance mesh covering representative areas of the national geography.
- The Open Network, with a few sampling points taking very high sensitivity measurements.
- The continuously monitoring Automatic Stations Network (REA) provides real-time data on the concentration of activity in the atmosphere, as well as on the levels of environmental radiation in different areas of the country.

From the evaluation of the results of these surveillance programmes it may be concluded that the releases from the facilities represent only a minor fraction of the limits established and that no significant variations are observed with respect to the values normally obtained within the environmental radiological surveillance programmes, the radiological quality of the Spanish environment being maintained.

Throughout 2005, the radioactive releases from the facilities were maintained within normal values and were comparable to those of other European and American installations.

Beyond the surroundings of the facilities, the CSN undertook the surveillance of the environment at national level, with the collaboration of other institutions. The last campaign analysed, which corresponded to 2004, confirmed the behaviour observed over the years.

### Continental waters

- The values of the indexes of total alpha, total beta and remaining beta fundamentally reflected the geographical characteristics of the soils over which different stretches of the rivers run. These values may be affected by urban releases and crop growing areas.
- The highest values of beta activity indexes appeared at the stations located downstream of major population areas.

- Artificial gamma-emitting radionuclides were below the corresponding detection limits.
- In the analysis of Cesium-137, activities for this isotope above the detection limit were detected in all the samples, the activity concentration values being of the same order as the lowest detected in the rest of the European Community countries (Open Network).
- The values for tritium concentration were influenced by the effect of releases from the nuclear power plants into the rivers Tajo (Trillo, José Cabrera and Almaráz nuclear power plants), Júcar (Trillo NPP) and Ebro (Ascó NPP). These values, which were lower than the permissible reference values, are not significant from the radiological point of view and did not represent any risk for the population or the environment.
- One of these values was obtained from a sample taken in January 2005 at a station located downstream from the Trillo nuclear power plant, very close to the outlet channel, for which reason there would be little dilution in the event of sampling coinciding in time with effluent release. In order to avoid this, the sampling point was changed and an integrated sample was taken, analysis of which would be more representative of the average concentration.

#### Coastal waters

During the last campaign performed, in 2004, samples were taken at 14 points. The values were fairly homogeneous at all the sampling points and similar to those obtained during previous campaigns.

- The values of tritium were slightly higher at one of the points located on the Mediterranean sea.
- As regards the index for remaining beta activity, only three values were detected above the

detection limits, these being very close to these limits.

- No artificial gamma-emitting isotopes were detected in any of the samples analysed.
- In all the samples analysed Cesium-137 was detected, with activity concentration values of the same order as the background values detected at other stations in the European network (Open Network).

#### Atmosphere and terrestrial medium

During the last campaign analysed, in 2004, a total 20 laboratories collaborated in both the dense and open networks.

The results of the measurements performed on samples of air, soil, drinking water, milk and type diet in 2004 were normal.

The Automatic Metering Station Network (REA) is made up of 25 stations distributed throughout different autonomous communities. Each station is equipped with instrumentation for the measurement of gamma dose rates and concentrations of radon, radio-iodines and alpha and beta emitters in the air. The stations measure continuously and the data are received, already analysed, at the REA supervision and control centre located in the CSN Emergency Room (Salem).

During 2005 the specific agreements governing connection of the CSN network to the automatic radiological surveillance networks of the autonomous communities of Valencia, Catalonia and the Basque Country were satisfactorily developed. An agreement is expected to be reached in 2006 with the autonomous community of Extremadura for the connection of its network to that of the CSN.

Work continued throughout 2005 on the project for the operation of an automatic continuous gamma spectrometry station, the aim being to

complement certain of the stations of the REA with this type of equipment.

The results of the measurements performed during 2005 were characteristic of the environmental radiological background and indicate the absence of radiological risk for the population and the environment.

Within the Specific Surveillance Programmes, and as regards the radiological surveillance programme in the area of Palomares undertaken as a result of the aviation accident that occurred in 1966, the procedure for expropriation of the affected land was developed throughout 2005. This is expected to lead to occupation of this land at the beginning of 2006, which will make it possible to initiate the activities contemplated in the research plan for the area.

### **7.3. Protection against natural radiation sources**

Within the framework of the CSN action plan for the performance of Title VII “*Natural radiation sources*” of the Regulation on Protection against

Ionising Radiations, development of the pilot study continued throughout 2005 in industries of interest.

The radon gas measurement studies have continued in different places of work and dwellings, along with the study of the feasibility and effectiveness of different remedial actions against the presence of radon gas in buildings.

As part of the study on the response of radon measurement systems under the ambient conditions of work places, a second campaign was carried out using passive detectors. This was performed with the collaboration of eight Spanish laboratories with measuring systems and two overseas laboratories in Ireland and Japan.

In this respect, and with a view to providing information on the current situation, the perspectives of the action plan and the results of the different studies performed, a technical meeting was held at the Nuclear Safety Council on November 21<sup>st</sup> 2005 with representatives of the Ministries of Labour and Health of the 17 autonomous communities and the two autonomous cities of Ceuta and Melilla.



## 8. Nuclear and radiological emergencies. Security

### 8.1. Emergency preparedness at national level

#### Basic nuclear emergency plan (Plaben)

The *Basic nuclear emergency plan* was approved by the Government in 2004, in response to a proposal by the Ministry of the Interior, and constitutes the basic directive for the preparation and planning of the response to nuclear emergencies in the Spanish national territory.

On June 7<sup>th</sup> 2005 the Sub-Secretariat of the Ministry of the Interior issued a Resolution approving the directives enacting the Plaben in relation to the programmes on preliminary information for the population, the training and preparation of those required to intervene and the drills and exercises included in the off-site nuclear emergency plans.

The emergency preparedness activities performed by the CSN within this framework may be grouped into three different but complementary areas or courses of action:

- Coordination activities with the Directorate General for Civil Defence and Emergencies, relating to preparations and planning for emergencies outside the facilities, or activities relating to information for the population and the training of those required to participate in the event of an emergency.
- Activities performed internally for the development, maintenance and improvement of the emergency response capacities of the organisation, especially those of the emergency room (Salem).

- Coordination activities with the autonomous communities, fundamentally those with which the CSN has commission agreements.

#### Activities performed by the CSN-Directorate General for Civil Defence and Emergencies

The basis for the activities performed by these two organisations is the collaboration agreement signed on May 3<sup>rd</sup> 1999 by the Ministry of the Interior and the CSN in relation to emergencies.

As regards activities relating to the off-site emergency plans, carried out within the framework of mutual collaboration between the Directorate General for Civil Defence and Emergencies (DGPCE), the provincial Civil Defence units and the CSN, with the participation of the heads of the radiological groups, support was provided for the drawing up of the off-site emergency plan master plans and the radiological group procedures required by the new Plaben. By the end of 2005 the CSN had reported favourably on all the off-site emergency plans, that is the Pengua (Guadalajara), Penca (Cáceres), Penbu (Burgos), Penta (Tarragona) and Penva (Valencia).

Systematic collaboration between the two organisations continued throughout 2005 on the joint planning of drills and exercises, the training of personnel required to intervene and public information.

The specific working group set up by the DGPCE and the CSN for preparation of the *Basic directive on Civil Defence planning for radiological risk* has continued with its work. The initial draft of this directive was submitted to the Permanent Commission of the National Commission for Civil Defence on December 1<sup>st</sup> 2005.

Within the framework of its regulatory function, the CSN has participated in analysis of the *Basic standard on corporate self-protection*, drawn up by the DGPCE. Along with the *Basic standard on civil*



*defence*, this constituted the main instrument for enactment of the Civil Defence Act, Law 2/1985.

Finally, during 2005 the data from the 907 automatic stations making up the Radioactivity Alert Network (RAR) were systematically shared, as in the past, without any significant novelties.

#### **Off-site emergency plans. Provision of resources and preparation and training of emergency response personnel**

In compliance with the functions for which the CSN is responsible, activities continued throughout 2005 with a view to improving the operability of the off-site nuclear emergency plans, at both the provincial response level and the level of central response and support.

The Nuclear Safety Council participated in the on-going training sessions for those required to intervene in the off-site nuclear emergency plans, most of these sessions being promoted by Civil Defence. The participants in these activities were the heads of the radiological groups, the technical staff of the Sub-Directorate for Emergencies (SEM) and the coordinators of the emergency support service, contracted by the CSN. The objective of the sessions was to refresh basic radiation protection concepts and analyse new emergency standards.

The CSN has provided support for the heads of the Radiological Group in the task of adapting the Group's action plan and its enactment procedures to the Plaben, approved by RD 1546/2004.

In recent years the CSN has increased its response capacity in areas that might potentially be affected by a nuclear or radiological emergency. Thus, and in addition to the Radiological Group (RG) stand-by team, made up of two members of the organisation's technical staff, the following external resources were implemented in 2005:

- Local emergency support technical personnel, a service provided by a company holding a Radiation Protection Technical Unit (RPTU) licence contracted by the CSN.
- Availability of the Ciemat environmental radiological surveillance mobile unit and of the technicians and personnel required for the performance of environmental radiation and contamination measurements in areas potentially affected by a nuclear or radiological emergency at any point in the national territory and within a maximum period of 24 hours as from activation of the emergency.
- Internal Tecnatom personal dosimetry service, which includes a mobile whole body radioactivity counter for the measurement of internal doses in individuals potentially affected by internal contamination as a result of a radiological emergency, in areas close to that affected, this service being available at any point in the national territory and within a maximum period of 48 hours as from activation of the emergency.

As from January 1<sup>st</sup> 2005 the Geminis computer application has been fully operative, this containing and managing all data relating to the management of the radiological equipment for all the off-site emergency plans and reflecting the situation of this equipment in real time.

Furthermore, in 2005 an external company was awarded the supply of three thousand electronic direct reading dosimeters (DRD's) and corresponding management software over three years: 2005, 2006 and 2007. These will replace the pen dosimeters, thermoluminescent dosimeters and DRD's currently assigned to the PEN radiological groups as they become inoperable. In 2005 the CSN received 725 DRD's, 15 reading units and management software. It is expected that by the

end of 2006 the five PEN's would be equipped with the new DRD's.

## 8.2. CSN emergency response activities

### Emergency response organisation and action plan

The renovated Emergency room, the Organisation's emergency response coordination centre, has been operative since August 2005. This renovation has meant a complete innovation of the architectural, functional and operative aspects of the centre as part of the *CSN nuclear and radiological emergency management capacities improvement programme*. During the performance of the works, a provisional emergency room was set up, guaranteeing permanent attention by the Salem 24 hours a day, 365 days a year.

The new Salem was officially inaugurated on November 7<sup>th</sup> 2005 as part of the events commemorating the 25<sup>th</sup> anniversary of the CSN. It was opened by the Minister of Industry, Commerce and Tourism and was attended by the Plenary of the CSN, the presidents of the commissions for Industry, Tourism and Commerce of the Spanish Congress and Senate and the Director General of Civil Defence and Emergencies, among other authorities.

During 2005 the nuclear power plants and facilities carried out their mandatory annual site emergency drills, as established in the SEP.

The main international exercises in which the CSN Salem participated throughout 2005 were as follows:

- Within the framework of the European Union's programme of exercises for maintenance of the system for the rapid exchange of radiological information in the event of an emergency (Ecurie), the CSN participated in five Ecurie international exercises: four at level I, for the evaluation of communications by countries potentially affected by a hypothetical accident,

and one at level III, the Convex.3 exercise, on international coordination of the response to a nuclear emergency.

- Three Emercom exercises on communications with the International Atomic Energy Agency.

### Site emergency plans

During 2005 the CSN evaluated and reported favourably on nine revisions of the *site emergency plans* of all the nuclear power plants, which described the *areas under the control of the operator*, where the licensee exercises effective control of all the activities performed during operation of the facility, along with the organisations available to the licensee to address whatever emergencies might take place in this area.

The general reason for these revisions was compliance with the technical instruction approved by the organisation and requiring the nuclear facilities to adapt their emergency plans to the new Plaben. In addition, the new revisions were adapted to the requirements of the technical instruction regarding basic criteria to improve the preparation, performance and evaluation of the annual emergency drills and exercises.

The evaluation of the emergency drills carried out and the results of the inspections of the facilities to determine the degree of implementation of their respective site emergency plans and emergency drills led to the conclusion that the activities performed by the licensees to maintain their emergency response capabilities and their coordination with the national authorities in responding to possible emergencies were adequate.

## 8.3. Security of nuclear materials and facilities

The specific action plans and the preventive information plan are the responsibility of the different operating units and services of the Security Forces

and Bodies, and the site security system is exclusively the responsibility of the licensee of the facility or nuclear materials.

#### **Development and application of specific security standards**

The Nuclear Safety Council has drawn up a set of criteria to be fulfilled by the systems, services and procedures integrating the security systems for nuclear facilities and materials.

During 2005 the licensees of nuclear facilities and materials, and those performing activities involving the handling, storage, processing and

transport of nuclear materials, participated both in the drawing up of the aforementioned criteria, submitting different comments and discussing different issues, and in their specific implementation at the different facilities.

In addition, during the inspection campaign carried out during 2005, performed as a result of the renewal of the specific authorisation established by Royal Decree 158/1995, of February 13th, on the *Security of Nuclear Facilities and Materials*, the CSN checked the feasibility, suitability and degree of implementation of these criteria at the nuclear power plants and other nuclear installations.

## 9. Research and development

The Law by which the Nuclear Safety Council was created establishes that one of the functions of the CSN is to set up and monitor research plans on nuclear safety and radiation protection.

In this respect there were 68 projects under way in 2005 with a total budget of 3,366,060 euros, managed in accordance with the criteria established in the CSN research plan and ordered on the basis of common objectives and interrelationships

in eight programmes, oriented towards improving understanding, methods and tools in the areas of nuclear safety and radiation protection.

Most of the research projects are carried out in collaboration with other institutions. Especially significant in this respect are those performed in collaboration with Unesa, within the framework of the Coordinated Research Plan (PCI), with Ciemat and Enresa, within the corresponding Framework Collaboration Agreements, and – at international level – with the OECD Nuclear Energy Agency.

## 10. Regulations and standards

The following provisions affecting the regulatory framework of the CSN were approved and published in 2005:

- Royal Decree 9/2005, of January 14<sup>th</sup>, establishing a list of activities potentially contaminating the soil and the criteria and standards for the declaration of contaminated soils.
- Amendments in 2002 to the international code on the safety in transport of irradiated nuclear fuel, plutonium and high level waste in packages on board ships (CNI Code), adopted on December 12<sup>th</sup> 2002, by means of Resolution MSC 135(76), of January 26<sup>th</sup> 2005.
- Royal Decree 208/2005, of February 25<sup>th</sup>, on electrical and electronic apparatus and the management of their wastes.
- Resolution of April 1<sup>st</sup> 2005, of the Sub-Secretariat of the Ministry of the Presidency, ordering the publication of the Agreement of the Cabinet of Ministers, of February 25<sup>th</sup> 2005, adopting orders for the implementation of measures to promote productivity.
- Order INT/1695/2005, of May 27<sup>th</sup>, approving the Nuclear Emergency Plan at its Central Level of Response and Support.
- Resolution of June 7<sup>th</sup> 2005, of the Sub-Secretariat of the Ministry of the Interior, approving the directives that are to govern programmes for preliminary information for the public, the training and preparation of participants and the exercises and drills of the off-site nuclear emergency plans corresponding to the nuclear power plants.
- Order ITC/2115/2005, of June 17<sup>th</sup>, declaring the decommissioning of the ARBI experimental nuclear reactor at the Industrial Testing and Research Laboratories.
- Order ITC/2821/2005, of September 7<sup>th</sup>, modifying the quantities referred to in article 3.c) of Royal Decree 1464/1999, of September 17<sup>th</sup>, on activities included in the front end of the nuclear fuel cycle.
- Special mention may be made of the approval of Law 24/2005, of November 18<sup>th</sup>, on Reforms for the Promotion of Productivity, which modified various of the articles of the Nuclear Energy Act (LEN), Law 25/1964, of April 29<sup>th</sup>, and Law 15/1980, creating the CSN, an extract of which is presented below:
- Modification of articles 28, 29 and 30 of the LEN: It is established that the system of authorisations for nuclear and radioactive facilities shall be regulated by way of specific Regulations; the CSN is attributed the function of watching over such facilities in each of the phases of their lifetimes in order to check that they are operated in accordance with the aforementioned authorisations and the system for the transfer of such authorisations is modified, such that in addition to authorisation by the Ministry of Industry, following a mandatory report by the CSN, they shall require a preliminary hearing by the Autonomous Communities having competence for territorial planning and the environment.
- Modification of Chapter XIII of the LEN, with new wording better adapted to Spain's international commitments in relation to nuclear non-proliferation and the security of nuclear materials.
- Modification of article 2 a) of Law 15/1980, creating the CSN, in order to establish the binding nature of the Instructions issued by the

CSN under this same article, the said CSN Instructions being defined as binding standards in relation to the issues dealt with and the persons intervening.

The objective of the CSN Strategic Plan in this area is to develop the standards pyramid, identifying shortcomings and preparing the corresponding texts, tracking the evolution of regulatory systems in the countries of our immediate environment and adapting the Spanish situation to the international standards. Thus, in 2005:

- Studies were carried out, with the collaboration of the Ministry of Industry, Tourism and Commerce, for the modification of chapter fourteen, relating to infringements and sanctions in the nuclear area, of the Nuclear Energy Act, Law 25/1964, of April 29<sup>th</sup>, with a view to improving it and adjusting it to the new criteria of jurisprudence and doctrine regarding sanctions proceedings in the Public Administration.
- A text was completed for the modification of different sections of the Regulations on Nuclear and Radioactive Facilities, approved by Royal Decree 1836/1999, of December 3<sup>rd</sup>, this having been submitted to the Ministry of Industry, Tourism and Commerce during the last quarter of the year for the necessary arrangements.
- Work began on the drawing up of a Regulation on the Safety of Nuclear Facilities, integrating criteria and standards uniformly accepted in the western countries and achieving uniform regulatory models depending on the reference standards of the countries of origin of the technology.

During 2005 the following Safety Guides (GS and Instructions (IS) were approved and published by the Council:

- Council Instruction IS-07, of June 22<sup>nd</sup> 2005 (BOE of July 20<sup>th</sup> 2005) on *Fields of application of radioactive facility personnel licences*.
- Council Instruction IS-08, of July 27<sup>th</sup> 2005 (BOE of October 5<sup>th</sup> 2005) on *Criteria applied to require specific advice on radiation protection from the licensees of nuclear and radioactive facilities*. This instruction implies compliance with a Resolution by the Commission for Industry of the Spanish Congress.
- Revision 1 of GS - 7.5. Actions to be taken with respect to persons that have suffered radiological incidents. May 2005.
- Revision 1 of GS – 5.1. Technical documentation to request the operating permit for radioactive facilities handling and storing non-encapsulated radionuclides (2<sup>nd</sup> and 3<sup>rd</sup> Category). July 2005.
- Revision 1 of GS – 5.2. Technical documentation to request the operating permit for radioactive facilities handling and storing encapsulated sources (2<sup>nd</sup> and 3<sup>rd</sup> Category). July 2005.
- Revision 1 of GS – 5.10. Technical documentation to request the operating permit for *industrial X-ray facilities*. November 2005.

During 2005 a standard on style was drawn up and approved regarding the lexicology to be applied in drawing up safety guides and instructions, and an AENOR course was delivered with this same objective.

Finally, the following may be underlined as regards activities relating to international standards:

- As regards comments on the IAEA guidelines, we are up to date in the submittal of comments on the projects received and, following approval

of the modification of the corresponding CSN management procedure at the end of 2004, this reflected two phases of comments, one between the countries participating in drawing up such guidelines and the other for comments within the country.

- Agreements were signed with the Spanish Nuclear Society and the Spanish Radiation Protection Society for translation into Spanish of the IAEA nuclear safety and radiation protection guidelines, respecting the terminology and translation standards of this Organisation. At the end of 2005 the first two pilot guides were submitted to the IAEA, one for each society, for the validation of the translation procedure.
- As a result of the Integrated Regulatory Review Service (IRRS) mission requested by Spain from the IAEA, different Council working groups carried out an in-depth study of the requirements established in the IAEA standards and of the legal extent and manner in which these requirements are, or should be, incorporated into the Spanish legislation.
- Within the tasks of the WENRA *Regulatory Harmonisation Working Group* (RHWG), a study was being carried out on the degree of compliance with the standards in each of the member countries and their implementation, in relation to a series of agreed on reference levels, the results of which will be presented in 2006.

## 11. Institutional and international relations

### 11.1. Institutional relations

The Strategic Plan for 2005-2010 and the Annual Work Plan for 2005 establish the following as the strategies and objectives regarding institutional relations: the strengthening of relations with the Government; promotion of agreements with the ministries, especially Interior, Defence and Health; the signing and improvement of commission agreements; the strengthening of relations with the delegates and sub-delegates of the Government as those responsible for emergency plans, and the promotion of agreements signed with universities and institutions.

#### Relations with Parliament

Particularly significant this year, as regards relations with the Spanish Congress, has been the visit to the CSN by the members of the Commission for Industry, Tourism and Commerce on February 2<sup>nd</sup>, the aim being to hold a technical and institutional meeting providing first-hand insight into the activities and working processes of the technical staff and Plenary of the CSN. As a result of this first visit by the members of this Commission, a programme of activities and technical explanations for facilities in the nuclear sector was drawn up.

During 2005 the following appearances were made before the Congressional Commissions for Economy and the Exchequer and for Industry, Tourism and Commerce:

- On December 14<sup>th</sup> 2005, the Lady President appeared in order to present the General Report on the activities performed by the Nuclear Safety Council and, as a result, the Commission ap-

proved a total 27 Resolutions, 7 of which were addressed to the Government of the nation.

- As a result of the study carried out by the Commission for Industry, Tourism and Commerce in relation to the Essential Services Water System piping degradation incident that occurred at Vandellós II nuclear power plant in August 2004, the Lady President, CSN technicians and external technicians appeared before the Panel appointed for this purpose on April 25<sup>th</sup>, May 23<sup>rd</sup> and June 13<sup>th</sup>, respectively. The conclusions reached by this Panel led to approval by the Commission of a series of conclusions covering the following: a) Licensing, control and inspection activities; b) Actions relating to the event and its evolution; c) Interactions between the licensee and the CSN; and d) Actions relating to Communications.
- On March 2<sup>nd</sup>, on request by the Grupo Popular parliamentary group, the Lady President appeared before the Commission for Industry, Tourism and Commerce to explain the policy of the organisation, and again on October 6<sup>th</sup>, also in response to a request by the same group, to report on the incident that occurred at the Vandellós II nuclear power plant in August 2004 and on the status of the control rod drive mechanism penetrations of the Santa María de Garoña nuclear power plant.

Twenty-one reports were submitted to the Congress, requested by means of resolutions by the Commission for Industry, Tourism and Commerce on December 14<sup>th</sup> 2004 and corresponding to the Annual Report for 2003, along with 14 reports in compliance with the resolutions resulting from the CSN Annual Reports for 2002 and 2003.

The number of written requests for questions issued to the Government by the members of the Congress amounted to 34, corresponding to a much



larger number of reports. The number of written requests for questions issued to the Government by the members of the Senate amounted to 14 and referred to the facilities (nuclear, radioactive and fuel cycle) and subjects such as nuclear safety, radiation protection and radioactive waste, among others.

#### **Relations with the Central Administration**

##### **Ministry of Industry, Tourism and Commerce**

On March 10<sup>th</sup> 2005 the annual meeting between the Nuclear Safety Council, the Ministry of Industry, Enresa and the different Autonomous Communities with competences transferred in relation to 2<sup>nd</sup> and 3<sup>rd</sup> category radioactive facilities was held.

##### **Ministry of the Interior**

The basis of the activities carried out by both organisations was the collaboration agreement signed on May 3<sup>rd</sup> 1999 between the Ministry of the Interior and the CSN in relation to emergencies. For the performance of the different objectives mapped out in this agreement, specific working groups were set up, along with a mixed agreement tracking commission that meets periodically.

Different activities continued throughout 2005 with the Directorate General for Civil Defence in relation to the information to be provided to the public on the health protection measures applicable to the course of action to be implemented in the event of a radiological emergency, as did the collaboration with the Armed Forces in defining the basic equipment for their NBC (Nuclear, Biological and Chemical) units.

##### **Ministry of Education, Culture and Sport**

As a result of the Framework Agreement signed with the Ministry of Education, Culture and Sport, the so-called sessions to bring teachers closer to the functions of the Nuclear Safety Council were held throughout 2005. These were aimed at secondary school teachers specialising in mathematics, physics and chemistry and natural history.

##### **Ministry of Public Health and Consumption**

An important milestone was the completion of the draft collaboration agreement between the Nuclear Safety Council and the Carlos III Healthcare Institute for the *performance of an epidemiological study investigating the possible effect of exposure to ionising radiations arising as a result of the operation of Spanish nuclear facilities on the health of the population residing in the surrounding areas*, which was paralysed pending incorporation of the appreciations of a Motion submitted to the Plenary in this respect by the GPS and the GPIV-IU-ICV on June 15<sup>th</sup> 2005.

Activities continued also with the Directorate General for Public Health of the Ministry involving the national and autonomous community health authorities and the CSN in the area of public information.

##### **Ministry of Defence**

The CSN participated in the setting up of a working group for management of the Radiation Protection Services of the Ministry of Defence, the result of a meeting with the General Defence Healthcare Inspectorate on the reorganisation of structures reporting to the Ministry of Defence on matters relating to radiation protection.

The CSN also participated in the joint meeting of the Ministry of Defence and other international organisations in the exercises on the limitation of proliferation through the *Blue Action* exercises and in the PSI exercises held in Bergen in October 2005.

Likewise, the CSN has continued to collaborate with a view to achieving more efficient coordination of the activities carried out by both organisations in the fields of radiation protection and dosimetry.

#### **Relations with the autonomous administrations**

The CSN maintains institutional relations with the autonomous administrations via two different

channels: general relations and commissions for the transfer of functions.

#### **Autonomous communities: general relations**

The autonomous communities of Asturias, the Balearic Islands, the Canary Islands, Cantabria, Castilla-León, Catalonia, Ceuta, Extremadura, Galicia, Madrid, Murcia, Navarra, La Rioja, Valencia and the Basque Country already have areas of competence transferred in relation to authorisations and sanctions for 2<sup>nd</sup> and 3<sup>rd</sup> category facilities, as a result of which the CSN sends them its mandatory reports directly. In the case of Andalusia, Aragón, Castilla-La Mancha and Melilla, these reports are sent to the Central Administration.

On November 21<sup>st</sup> 2005, the CSN summoned all the Autonomous Communities to a meeting on *Protection against exposure due to natural radiation: CSN action plan*, during which it explained the *Situation of the pilot studies, the Environmental Radiological situation regarding radon and industries, the Protection of air crews, the Potential radon exposure map, wastes*, etc.

Furthermore, a framework agreement was signed on technology transfer, training, information and informative activities on nuclear safety and radiation protection in the industrial and medical fields, as well as for collaboration in R&D&i programmes with the Community of Madrid.

#### **Autonomous communities: function transfer commissions**

On February 23<sup>rd</sup> 2005 the *document on general Criteria for functions transfers* was approved, this containing provisions regarding: inspections for the licensing and control of the operation of radioactive facilities, inspection of the transport of nuclear fuel and other radioactive materials, analyses and assessments, collaboration in radiological emergencies, control inspections of the radiation protection services of radioactive facilities and companies selling and providing technical assistance for

medical X-ray equipment, environmental radiological surveillance and the training and licensing of radioactive facility operating personnel.

On April 15<sup>th</sup> 2005 the entry into force of the transfer agreement was signed with the autonomous community of the Principality of Asturias, and on June 28<sup>th</sup> the 2<sup>nd</sup> addenda to the agreement with the autonomous community of Valencia was signed. As a result, the CSN now has function transfer agreements with the eight following autonomous communities: Asturias, Catalonia, Galicia, the Balearic Islands, the Canary Islands, Navarra, Valencia and the Basque Country. Conversations are well under way between the CSN and the autonomous community of the Region of Murcia in this respect.

During 2005, in development of the approved criteria, meetings were held with the different mixed tracking Commissions for the transfer agreements signed with the autonomous communities of the Balearic Islands, the Basque Country, Catalonia, Valencia, Navarra and Galicia. The Canary Islands requested CSN trusteeship for labour-related reasons.

Also in this area, on November 8<sup>th</sup> 2005 the annual meeting was held with the inspectors commissioned in the different autonomous communities having function transfer agreements in place.

#### **Relations with the local administrations**

Different meetings have been held with the AMAC in order to deal with the contents developed within a framework agreement and a specific agreement for the provision of information and training for members of the public and socio-economic sectors in the areas surrounding the Spanish nuclear power plants.

As regards requests for information from the town councils, two from the City Council of Madrid relating to the CIEMAT facilities may be singled out.

### Relations with other institutional organisations

Three reports were drawn up for the autonomous communities of Andalusia and Catalonia on work carried out at Palomares and complaints regarding activities at Acerinox and releases by Ercros into the River Ebro, respectively.

Four reports were prepared for different Ciemat divisions in relation to radiological safety at their installations and to a request for technical assistance in emergency situations.

The Sub-delegates of the Government in Córdoba, Jaén, Tarragona and Valencia posed a series of issues of their own or reflecting the concerns of the public.

### Relations with companies and organisations in the sector

The agreement between the CSN and Cedex for technical assistance to the former within the plan for environmental radiological surveillance of the aquatic medium were updated, as was the agreement between the CSN and Ciemat for the performance of environmental radiological measurements in the event of an emergency, by means of the mobile radiological control unit and the CSN and Ciemat fixed laboratories. Also, and as occurs every year, the specific agreements with the 32 laboratories that work with the CSN within the framework of the environmental radiological surveillance plans via the Sampling Stations Network (REM) are updated.

### Relations with universities

This year saw the execution of the first work plans following the signing in 2004 of three Agreements with Universities for the creation of Chairs: CSN and *Federico Goded* at the Polytechnic University of Madrid and *Argos* at the Polytechnic University of Catalonia.

The specific agreements subscribed with the Polytechnic University of Catalonia, the Polytechnic University of Madrid and the Universities of

Granada, Salamanca and Castilla-La Mancha continue in force.

As is also the case every year, specific agreements were updated with the Universities of León, Salamanca, Cáceres Badajoz and Seville for the performance of the Independent Environmental Radiological Surveillance Programmes and the Environmental Radiological Surveillance Programmes at national level (Dense and open networks) for the Garoña nuclear power plant and Juzbado and Quercus facilities, Almaraz nuclear power plant, La Haba and El Cabril and the Andújar Uranium Mill (AUM), respectively.

### Non-governmental organisations. Professional and trade union organisations

During 2005 communiqués and reports were sent to Greenpeace, Ecologistas en Acción, Verdemar, ESCURÇÓ and Hornasol.

Also sent were reports requested by the National Coordination Board for Nuclear Power Plant Workers' Committees, with which a meeting was held on October 26<sup>th</sup> 2005.

The CSN participated in the annual meeting of the Radiation Protection Forum (Health forum), held on February 9<sup>th</sup> and December 14<sup>th</sup> 2005, which integrated the Spanish Radiation Protection Society and the Spanish Medical Physics Society.

### Management of subsidies

Eight subsidies were awarded in 2005, and charged to the corresponding heading of the annual budget, for the financing of training and informative activities in relation to nuclear safety and radiation protection, these amounting to a total 72,276.21 euros.

## 11.2. International relations

The international activities of the CSN may be classified in three groups: institutional, technical and all those relating to the preparation and appli-

cation of international agreements on issues relating to nuclear and radiological safety and security. All these activities are carried out on two different planes: multilateral, through international organisations, institutions and forums, and bilateral or directly with peer institutions. Thus, the CSN participates in the following:

## Multilateral relations

### European Union

- Atomic Affairs Group (AAG): During 2005 the meetings of the atomic affairs group were tracked, these dealing with the admission of the EURATOM Community to the Internal Conventions on the Prompt Notification of Nuclear Accidents and on Mutual Assistance in the Event of Nuclear Accidents or Radiological Emergencies. Proposals for modification of the Directive on radioactive waste transfers management were presented, along with an initiative regarding a Regulation on nuclear assistance, and the work of the groups set up as a result of the document containing the Council's conclusions regarding the package of nuclear directives was led.
- European Coordination Group (CONCERT): as a result of a decision by the European Commission, the activities of the CONCERT group were concluded in 2005 following 13 years of work. The European Commission announced the creation of a new group (the European Nuclear Regulators Group, ENRG), in which will participate exclusively representatives of the Member States. Its mission might be to advise the Commission with a view to working towards harmonisation, probably through review of the Community Directives on Nuclear Safety and Waste Management, known as the "Nuclear Package".
- Regulatory Assistance Management Group (RAMG): The CSN participates in the meetings of the Steering Committees, at which

assistance projects are defined and their suitability discussed, depending on the needs presented by the beneficiaries.

During 2005, the CSN continued to participate in two assistance projects: TAREG 01/01 for assistance to the Commission in revising the projects performed and evaluating the benefits obtained by the countries receiving aid, and UK/RA/05 for assistance to the Ukrainian regulatory in areas relating to quality assurance. Likewise, there was approval for the CSN's participation in the new assistance project relating to the Ukrainian regulator (UK/RA/06), on this occasion for activities relating to the development of standards and training of the personnel to respond to emergency situations. The TACIS programme will come to an end in 2006, although the European Commission is analysing new financing instruments for this type of assistance.

- Ad-Hoc group on Nuclear Safety of the Atomic Affairs Group (WNPS). With a view to progressing towards the harmonisation of nuclear safety in the European Union, the AAG decided to set up an ad-hoc Nuclear Safety group for development of the action plan. The working programme was structured around three different areas: the safety of nuclear facilities, safety in the management of radioactive wastes (High and Low), financing of dismantling and waste management plans.

### IAEA

During 2005 the CSN contributed 300,000 US dollars to the budget of the Organisation for activities relating to technical cooperation in developing countries and 200,000 US dollars for the development and improvement of radiological safety in Latin America. These monetary contributions complement those made by the Spanish Government and other national institutions. During 2005 the CSN participated in more than

50 meetings of the different technical and advisory committees and in working groups and training courses, provided assistance for the 49<sup>th</sup> General Conference and managed scientific visits from developing countries.

- **General Conference:** this is the governing body of the IAEA. The 49<sup>th</sup> General Conference of the IAEA was held in Vienna in mid September 2005, with the participation of delegates from the member countries, among them Spain. The actions taken in 2004 were reviewed and the projects for 2005 were approved.
- **Advisory, technical and consultancy committees:** The CSN actively participates in numerous technical committees and groups in which subjects relating to its area of competence are debated: operating experience, waste disposal criteria, instrumentation and control, materials, chemistry, standards and long-term cutting edge projects. Particularly significant among these are the advisory committee on the development of standards and the committees on transport, nuclear safety, radiological safety and waste.

During 2005, the International Nuclear Safety Group (INSAG) centred its work on four areas of interest: analysis of operating experience, the establishment of a global safety regime, the definition of a set of safety principles and information for and the participation of social agents in decision-making in socially sensitive areas. In his annual letter, the Director General of the IEAE recognised the progress that had been made in relation to safety but also underlined certain worrying trends that should be analysed by countries possessing nuclear power plants.

#### NEA/OECD

The Nuclear Energy Agency is a semi-autonomous organisation within the OECD. Its main activities encompass issues relating to regu-

lation, nuclear safety, nuclear science, nuclear law, radiation protection, public health, waste management and research and development. The CSN participates actively in all its committees and is currently involved in technical and R&D projects relating to the safety of nuclear energy.

- **Committees and working groups:** The CSN continues to participate fully on the Steering Committee and in the programmes and activities of the NEA through the Committee for the Safety of Nuclear Installations (CSNI), the Committee for Nuclear Regulatory Activities (CNRA), the Radioactive Waste Management Committee (RWMC), the Committee for Radiation Protection and Public Health (CRPPH), the Nuclear Science Committee (NSC) and the Nuclear Law Committee (NLC).
- **Activities with the NEA:** In order to comply with the resolution of the Commission for Industry, Tourism and Commerce, which urged the Council to commission an independent and detailed international evaluation of its report on the lessons learned from the event that occurred at the Vandellós II nuclear power plant, the first meetings of the NEA Group of Experts took place on 22<sup>nd</sup> and 23<sup>rd</sup> November 2005, along with the preparatory interviews with the members of the Plenary and the Technical Staff. The completion of this work and the official submittal of the Report were scheduled for early March 2006.

#### Other regulatory groups

##### INRA

The International Nuclear Regulators Association, INRA, includes the eight countries with the widest experience of the licensing of nuclear activities (Germany, Canada, Spain, USA, France, Japan, the United Kingdom and Sweden). The top managers of the regulatory organisations of these countries are able to maintain an open and constructive dialogue on issues of common interest.

During 2005 Germany occupied the presidency of INRA. The group met twice to analyse and discuss technical issues of common interest at the highest institutional level. This year aspects relating to ageing of the plants and their implications for the safety of the facilities were dealt with, along with issues relating to the structure, organisation and independence of the regulatory authorities. Another question of interest debated this year was the possibility of the association being extended. A decision was expected to be taken in this respect at the beginning of next year.

### **WENRA**

The Western European Nuclear Regulators Association (WENRA) was set up with the objective of its serving as a regional forum for the exchange of information and experience on nuclear safety and the development of mechanisms leading to harmonisation in the short and medium term.

WENRA is currently made up of Germany, Belgium, Bulgaria, the Czech Republic, Slovakia, Slovenia, Spain, Finland, France, Holland, Hungary, Italy, Great Britain, Lithuania, Rumania, Sweden and Switzerland.

The group met twice in 2005. The institutional representation in this association was held by those having maximum responsibility in the different national Nuclear Safety authorities.

WENRA is currently developing an methodology that aims to bring about the harmonisation of safety at the nuclear facilities of the Organisation's member countries. There are currently two working groups, one on nuclear reactors and the other on dismantling and radioactive waste management.

### **Latin American Nuclear Regulators Forum**

The Latin American Nuclear Regulators Forum (FORO), which comprises Argentina, Brazil, Cuba, Mexico and Spain, with Chile currently in the phase of integration, periodically analyses and

reviews questions of interest for the area in relation to nuclear safety.

The aim of the Forum is to attempt to identify regional regulatory problems in relation to radiological safety in general and to propose policies and action plans contributing to the improvement of nuclear and radiological safety in the region.

In order to carry out these activities, the Latin American Regulators Forum has decided to undertake the design, development, implementation and operation of a Latin American Network allowing for the management and transfer of know-how in nuclear and radiological safety and wastes, with a view to improving the levels of radiological safety in the region. At the same time the Forum is promoting national projects in disciplines relating to nuclear and radiological safety.

During 2005 the Forum was presided over by the Lady President of the National Nuclear Safety Commission of Cuba. During her term the FORO technical programme was consolidated.

### **International conventions on nuclear and radiological safety and security**

- Convention on nuclear safety: 2005 saw the conclusion of the phase of questions and answers to other countries, following which the Revision Meeting was held. The submittal of the Spanish Report was undertaken by the Lady President of the CSN, as part of a delegation made up of the Technical Directors of the CSN and representatives of the Ministry of Industry, Tourism and Commerce and the Spanish Electricity Industry Association. During the revision by the other countries, Spain mapped out the lines of work and improvement in nuclear safety for the coming years. The progress made in this respect will be reported at the next Revision Meeting, in three years time.



- **Convention on the Security of Nuclear Materials:** The Diplomatic Conference to amend the Convention on the Security of Nuclear Materials took place in July 2005, the objective being to extend the scope of application to include nuclear facilities and identify new crimes to be incorporated into the Penal Codes of the Member States to the Amended Convention. Since that time a process has been open for the different States to be able to ratify the new text. The Spanish delegation at the Diplomatic Conference was presided over by the Permanent Representative Ambassador to the International Organisations in Vienna and included also representatives of the CSN and of the Ministry of Industry, Tourism and Commerce.
- **OSPAR Convention:** The objective of the Oslo Paris Convention (OSPAR) is to protect the marine environment of the N-E Atlantic area against the effects of human activities and includes a number of committees, among them the Radioactive Substances Committee (RSC), in which the CSN participates.
- **Convention on Safety in the Management of Spent Fuel and on Safety in the Management of Radioactive Waste:** The Second National Report on compliance was drawn up. The Report was coordinated by the Ministry of Industry, Tourism and Commerce, with the participation of the CSN and ENRESA. Since October the phase of questions and answers with the other countries party to the Convention has been under way. The Revision Meeting will be held in Vienna on May 24<sup>th</sup> 2006.

#### **Bilateral relations**

##### **United States of America**

On 23<sup>rd</sup> and 24<sup>th</sup> May 2005 a high level bilateral meeting was held between the NRC and the CSN

in the United States, attended by the American President and Board Members and the Lady President of the CSN, accompanied by technicians from different areas. During the meeting the Bilateral Agreement between the NRC and the CSN was renewed and subject-specific meetings were held.

##### **Republic of France**

As part of the activities agreed on during the last bilateral meeting between the managers of the two regulatory organisations, the crossed inspections activities have continued. During this year SN technicians participated in an inspection of various medical radioactive installations in Bordeaux and technicians from the DGSNR participated in two radioactive facility inspections, one medical and the other industrial, in Madrid.

##### **Russian Federation**

An objective mapped out for 2005 was to improve collaboration with the Russian regulatory body, since despite the fact that there is a bilateral agreement in place, signed in 1994, no subject for cooperation has been specified in recent years. During the meeting held in Moscow with the top management of the Russian organisation, the two parties explained the current situation and the challenges for the future, seeking to identify common interests, and the areas in which the parties were interested in collaborating in the future were specified.

##### **Republic of Ukraine**

Since the signing of the cooperation agreement in 1997, the CSN has assisted the Ukrainian organisation in a number of areas, within the framework of the European Union. In 2005 the CSN is undertaking two projects for assistance to Ukraine, financed via the TACIS Programme.

## 12. Public information and communication

In order to maintain both the general public and the different social groups having concerns regarding the realms of competence of the CSN informed, the Council carries out a series of activities aimed at satisfying the different information needs.

The Council has maintained its proactive attitude towards communication and has undertaken improvements as regards the time taken to issue information, understanding of this information, adaptation to the information needs of the media and adaptation of the social perception of risk to reality in different situations.

Work has been performed especially on providing a response to the resolution of the Spanish Congress, which urged the CSN to inform the Commission for Industry, Tourism and Commerce with sufficient frequency of the criteria established for the issuing of institutional press releases relating to events at nuclear and radioactive facilities and, within six months, to draw up a communication plan addressing the information policy of the Council in all its areas of competence.

Certain activities warrant special mention during 2005:

- *Nuclear power plants*: most of the information issued by the CSN (74.06%) referred to events to be reported to this Organisation by the nuclear power plants. The incidents and events reported by the nuclear power plants were also the subject of most of the news items appearing in the media, with tracking of the incident that occurred at the Vandellós II plant in August

2004, relating to the Essential Services Water System, being especially significant.

- *Drills*: The mandatory emergency drills were carried out at the Spanish nuclear power plants and punctually reported.
- *Radioactive facilities*: The press releases issued by the CSN in this area represented 6.34% of the total.

The CSN makes important efforts to keep society informed with the rigour and objectiveness that needs to be guaranteed by a technical organisation. During this period 4,513 telephone calls were received from the media, which were all responded to, and 63 press releases were issued. These were sent to the press and to the personnel of the institutions established in the action procedures and identified as stakeholders. At the same time this information was reflected on the website of the CSN, along with other news items of interest.

The Council has participated in the working group on the establishment of the Integrated Plant Supervision System (IPSS) and its adaptation to communication requirements.

The communications area of the CSN has continued to participate in Cowam (Community Waste Management) España. The work of this organisation consists of studying and analysing short and long-term decision-making at facilities potentially eliciting social rejection. This activity is carried out within the framework of a specific agreement signed with the Association of Municipal Areas with Nuclear Power Plants (AMAC) for the performance of a communications and educational programme in areas hosting nuclear power plants and analysis of its impact on public opinion in such areas.



Within the context of this Agreement, seven local Information commissions (LIC) were set up, one in each nuclear area, including the institutions, local leaders and inhabitants of municipal areas located close to nuclear power plants, the objective being to increase the information associated with such facilities and extended its scope to include the members of the public in their areas of influence. Likewise, educational activities were undertaken, aimed at the local mayors and elected representatives and at the population living around nuclear power plants.

At international level the CSN participates in the PIME (Public Information Materials Exchange), which is the annual meeting of communicators related to the nuclear field throughout Europe.

During 2005 two spokesperson training courses were carried out for the personnel of the CSN.

As regards information for the public, the number of external consultations responded to by e-mail during this last year amounted to 395, 20% more than in the previous year. Requests for information are channelled via the contact website: [comunicaciones@csn.es](mailto:comunicaciones@csn.es)

During this year a new link were included in the CSN website ([www.csn.es](http://www.csn.es)) for frequently asked questions, this including answers to the questions most often repeated in external consultations.

On July 7<sup>th</sup> 2005, within the framework of the collaboration agreement between the CSN and the Ministry of Education and Science, working sessions were held on how to bring the subject of nuclear safety closer to school teachers, and the teacher's guideline: the CSN response to emergencies, was prepared.

The CSN has an installation that is used exclusively to provide information to the public, the information centre. During 2005 this centre received 240 visits, amounting in total to 5,480 people, 5,107 from education establishments, 343 institutional visits and 30 private.

During 2005 the CSN published 26 new works, 4 updates and 10 reprints of Technical Reports, safety guides, documents (standards, R&D), periodic publications, informative leaflets, audio-visual materials and co-editions with other organisations.

## 13. Management of resources

### 13.1. Organisational improvements and training activities

The most significant activity initiated this year to comply with both a resolution by the Spanish Congress and with the objective established in the Strategic Plan for 2005-2010 – that of maximising the contribution made by the people working for the CSN to better compliance with the Mission, promoting their development and involvement and using their knowledge to the benefit of the entire organisation – was the establishment of a competence-based management model. This allows the technical and management capacities of the people working for the CSN to be optimised, adapting them to the present and future needs of the Organisation, on the basis of development and training.

The different stages identified for implementation of the competence-based management model are as follows: identification of disciplines, assignment of disciplines by areas, definition of competences for each of the disciplines and, finally, classification as generic and specific competences.

In order to define the levels of competence and associated knowledge, the CSN began to study the experiences of other regulatory bodies and opted for use of the *Systematic Approach to Training* (SAT) methodology, recognised by the IAEA as being essential for the identification of current competences and existing shortcomings and for the design and implementation of training programmes aimed at providing the necessary competences.

Prior to the complete implementation of a model of this type, effort was required in internal analysis and the development of methodologies by the organisation, this having an impact on the

management of economic and human resources and on training programmes for the coming years.

The year 2005 saw the completion of reports on all the regulatory process improvement tasks, as a result of which important processes were initiated, such as systematisation of the licensing basis and standards applicable to each facility, the new integrated plant supervision system and the programmes of corrective actions at each of the plants.

As regards planning and tracking, during the year 7, 380 hours were dedicated to planning, this amounting to around 1.6% of all hours of technical work.

A *command panel* was established as a mechanism for tracking of the Annual Work Plan (AWP), which would include the numerical values for the tracking indicators established for the most significant activities in the AWP.

As regards the Internal Quality Plan, 6,000 hours were dedicated to internal quality during 2005, this implying around 1.3% of the total hours of technical work.

As of December 31<sup>st</sup>, 120 procedures were approved: 27 relating to management, 17 administrative, four of which corresponded to the Integrated Plant Supervision System (IPSS), and 76 technical, 27 of which related to the IPSS. Of these 35 procedures were approved during 2005, 35 relating to management, 5 administrative (four on the Integrated Plant Supervision System) and 27 technical, all relating to the IPSS.

In relation to the information system, two electronic administration applications were put into service, both based on the electronic signature and aimed at the licensees of facilities and activities.

As regards the updating of equipment and systems, mention should be made of the fact that 117 new personal computers were been installed,

with the capacity to use the electronic signature on cryptographic support, as a result of which 65% of the Council's work stations now have this capacity.

The CSN training plan for 2005 was based on the same systematic approach as in previous years and was grouped into six major areas, corresponding to the basic training lines of the organisation: nuclear safety; radiation protection; the development of management skills, organisation and communication; standards, administration and management; information systems and languages.

During this year the activities foreseen in the CSN training plan for 2005 were carried out.

As of the end of the year the Council's training activities had registered 1,391 attendances, the average figure being 3.11 attendances per person.

The overall number of hours dedicated to personnel training amounted to 36,119, the total cost being 613,213.22 euros.

## 13.2. Management of human resources

As of December 31<sup>st</sup> 2005, the total staff of the Organisation amounted to 447 people. The number of women working at the Nuclear Safety Council represented 49.44 percent of the overall personnel.

Throughout the year selection processes were carried out to cover five posts within the system of free appointment. By way of a resolution of April 29<sup>th</sup> 2005, the 17 candidates who passed the selection tests held as a result of the resolution of April 12<sup>th</sup> 2004 were appointed as civil servants belonging to the Upper Grade of the Nuclear Safety and Radiation Protection Technical Staff.

In relation to upper management, the former Secretary General, Mr. Antonio Morales Plaza retired from this post, on his own decision, this being instrumented by way of Royal Decree 837/2005, of

July 8<sup>th</sup>, and Mr. Antonio Luis Iglesias Martín was appointed as the new Secretary General by Royal Decree 838/2005, of July 8<sup>th</sup>.

## 13.3. Economic and financial management

Economic aspects were broken down into budget items (incoming and outgoing budgets) and financial items (profit and loss account and balance sheet), the organisation's accounting being carried out in accordance with the *General public accounting plan*.

### Budget items

The initial CSN budget for the 2005 financial year amounted to 43,598 thousand euros. This initial budget did not undergo any increases as a result of the budgeting modifications made during the year. With respect to the previous year the initial budget underwent a variation downwards of 10.71 % .

The incoming budget varied by 12.15% with respect to the previous year, and the variation experienced by the outgoing budget with respect to the previous year was 5.57%.

The revenues arising from the payment of the fees for services rendered, the main CSN source of financing, reached the figure of 85.3% of total income, 7.5% less than the previous year.

The CSN acquired commitments to the sum of 41,261 euros, 94.6% of the definitive budgeting forecast. The total recognised obligations amounted to 40,216 euros, 92.2 % of the definitive budget.

### Financial items

Personnel expenses were quantitatively the most important (53.7%), followed by outside services (28.4%), transfers and subsidies (11.7%) and provisions for depreciation (5%).

The result for the financial year was negative to the sum of 2,339 thousand euros.