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INTEGRATED REGULATORY REVIEW SERVICE (IRRS)

FOLLOW-UP MISSION

TO

SPAIN

Madrid, Spain

27 January to 3 February 2025

DEPARTMENT OF NUCLEAR SAFETY AND SECURITY

Integrated
Regulatory
Review Service

IRRS

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REPORT OF THE

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THE INTEGRATED REGULATORY REVIEW SERVICE (IRRS) FOLLOW-UP MISSION TO

SPAIN

Mission dates:	*27 January to 3 February 2025*
Regulatory body visited:	*Consejo de Seguridad Nuclear/Nuclear Safety Council (CSN)*
Location:	*Madrid, SPAIN*
Regulated facilities, activities, and exposure situations in the mission scope:	*Nuclear power plants, fuel cycle facilities, waste management facilities, radiation sources in industrial and medical facilities, NORM facilities and activities, emergency preparedness and response, transport, decommissioning, control of medical exposure, occupational exposure control, environmental monitoring, control of discharge and public exposure*
Organized by:	*International Atomic Energy Agency (IAEA)*

IRRS REVIEW TEAM	
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IAEA-2025

The number of recommendations, suggestions and good practices is in no way a measure of the status of the national infrastructure for nuclear and radiation safety. Comparisons of such numbers between IRRS reports from different countries should not be attempted.

CONTENT

EXECUTIVE SUMMARY

At the request of the Government of the Kingdom of Spain (hereinafter referred to as Spain), an international team of senior safety experts met with representatives of the Consejo de Seguridad Nuclear (CSN), the Ministry for the Ecological Transition and the Demographic Challenge (MITECO), the Ministry of Health (MoH), and the Ministry of Interior (MoI) from 27 January to 3 February 2025 to conduct an Integrated Regulatory Review Service (IRRS) follow-up mission. The mission took place at the CSN headquarters, in Madrid, Spain. Unlike the IRRS initial mission to Spain, the IRRS follow-up mission was a stand-alone mission and was not combined with an Integrated Review Service for Radioactive Waste and Spent Fuel Management, Decommissioning and Remediation (ARTEMIS) mission.

The purpose of the follow-up mission was to review the actions taken by Spain to address the recommendations and suggestions made during the IRRS initial mission, which took place from 14 to 26 October 2018, with exception of Recommendation 2 on the General Radioactive Waste Plan (GRWP) of Spain, which will be addressed by an ARTEMIS mission.

The IRRS follow-up mission was formally requested by the Government of Spain in July 2023. A preparatory meeting was held from 3 to 4 September 2024 at the CSN headquarters in Madrid, Spain. This meeting was held to discuss the purpose, objectives, and detailed preparations of the follow-up review related to regulated facilities, activities and exposure situations in Spain and their safety-related aspects, and to agree on the scope of the IRRS follow-up mission.

The IRRS follow-up mission team consisted of four senior regulatory experts from four IAEA Member States and four IAEA staff members.

In preparation for the mission, Spain carried out a self-assessment of the status of its response to the recommendations and suggestions contained in the initial IRRS mission report and prepared a report accordingly. The results of the self-assessment and supporting documentation were made available to the IRRS team as Advance Reference Material (ARM) prior to the mission. During the mission, the IRRS team performed a systematic review of the ARM, including new evidence provided in response to requests from the IRRS team. The IRRS team noted that CSN staff had prepared extensively to ensure the success of the mission.

In addition to reviewing the actions taken by Spain to address the recommendations and suggestions made in 2018, at the request of the CSN a policy issue was discussed during the mission to share experiences on the safety culture of the regulatory body.

Overall, the IRRS team concluded that CSN staff showed a strong commitment and professionalism in carrying out their mandate to ensure nuclear and radiation safety in Spain. The Government and the CSN considered the recommendations and suggestions made by the 2018 mission in a systematic manner and made significant improvements in many areas. All reviewed twelve recommendations and twenty suggestions were either fully closed or closed on the basis of progress made and confidence in effective completion in due time.

The IRRS team noted, among others, notable achievements in the following areas:

- Human Resource Plan, including a systematic approach to training for all staff;
- Safety Culture of the CSN;
- National Radon Action Plan; and
- The CSN’s collaboration with the Autonomous Communities.

The IRRS team made one new suggestion:

- to establish guidance documents on the content of the information about possible radiation risks delivered to the public by authorized parties as required by legal provisions, in accordance with a graded approach.

In addition, the IRRS team identified two good practices:

- the Digital Radiation Passbook, a digital platform that provides users with real time dose data, reduces the need for manual data input, and enables the regulator to conduct real-time statistical analyses; and
- a centralised digital dosimetry system, provided by the CSN, to be used during emergencies for real time radiation dose monitoring of emergency workers of all off-site response organizations.

Throughout the mission, the IRRS team received the full cooperation in regulatory and technical areas and policy issues by all parties that demonstrated extensive openness and transparency.
At the end of the mission the IAEA issued a press release.

I. INTRODUCTION

At the request of the Government of the Kingdom of Spain (hereinafter referred to as Spain), an international team of senior safety experts met with representatives of the Consejo de Seguridad Nuclear (CSN), the regulatory body of Spain, the Ministry for the Ecological Transition and the Demographic Challenge (MITECO), the Ministry of Health (MoH), and the Ministry of Interior (MoI) from 27 January to 3 February 2025 to conduct an Integrated Regulatory Review Service (IRRS) follow-up mission. The mission took place at the CSN headquarters in Madrid, Spain.

The purpose of the follow-up mission was to review the actions taken by Spain to address the recommendations and suggestions made during the IRRS initial mission, which took place from 14 to 26 October 2018, with exception of Recommendation 2 on the General Radioactive Waste Plan (GRWP) of Spain, which will be addressed by the ARTEMIS follow-up mission.

The follow-up mission was formally requested by the Government of Spain in July 2023. A preparatory meeting was held on 3-4 September 2024 at the request of the CSN in Madrid, Spain. This meeting was held to discuss the purpose, objectives, and detailed preparations of the follow-up review related to regulated facilities, activities and exposure situations in Spain and their associated safety aspects, and to agree on the scope of the IRRS follow-up mission.

The IRRS follow-up mission team consisted of four senior regulatory experts from four IAEA Member States and four IAEA staff members. The IRRS team carried out the review in the areas covered by the initial mission in October 2018. In addition, a policy issue on the safety culture of the regulatory body was discussed.

In preparation for the mission, Spain carried out a self-evaluation of the status of the recommendations and suggestions made in the initial IRRS mission report and prepared a self-assessment follow-up report accordingly. This report and supporting documentation were provided to the IRRS team as Advance Reference Material (ARM) for the mission. During the mission, the IRRS team conducted a systematic review of all topics by reviewing the ARM, additional information provided, and by conducting interviews with CSN management and staff.

Throughout the mission, the IRRS team received the full cooperation in regulatory and technical areas from all parties. In particular, the CSN regulatory staff provided excellent assistance to the IRRS team and demonstrated a high degree of openness and transparency.

II. OBJECTIVE AND SCOPE

The purpose of this IRRS follow-up mission was to conduct a review of the recommendations and suggestions made to Spain during the IRRS initial full scope mission, with exception of Recommendation 2 on the General Radioactive Waste Plan (GRWP) of Spain, which will be addressed by the ARTEMIS follow-up mission, and to exchange information and experiences in the areas covered by the IRRS.

Unlike the IRRS initial mission to Spain, the IRRS follow-up mission was a stand-alone mission and was not combined with an Integrated Review Service for Radioactive Waste and Spent Fuel Management, Decommissioning and Remediation (ARTEMIS) mission.

The scope of the IRRS follow-up mission was the same as that of the initial full scope mission and covered the following areas: responsibilities and functions of the government; the global nuclear safety regime; responsibilities and functions of the regulatory body; the management system of the regulatory body; the activities and processes of the regulatory body including authorization, review and assessment, inspection, enforcement and the development and content of regulations and guides; and emergency preparedness and response. Facilities, activities, and exposure situations covered included nuclear power plants, fuel cycle facilities, waste management facilities, radiation sources in industrial and medical facilities, NORM facilities, and activities, emergency preparedness and response, transport, decommissioning, medical exposure control, occupational exposure control, environmental monitoring, discharge control and public exposure. In addition, a policy issue was discussed on the safety culture of the regulatory body.

The review was carried out by comparing Spain's existing arrangements with the IAEA safety standards.

It is expected that the IRRS follow-up mission will facilitate regulatory improvements in Spain and other Member States through the knowledge gained and experiences shared between the Spanish Counterparts and the IRRS reviewers, and through the evaluation of the effectiveness of the Spanish regulatory infrastructure for nuclear and radiation safety.

III. BASIS FOR THE REVIEW

A) PREPARATORY WORK AND IRRS TEAM

At the request of the Government of Spain, a preparatory meeting for the Integrated Regulatory Review Service (IRRS) follow-up mission was held on 3-4 September 2024. The preparatory meeting was conducted by Mr Scott Morris of USA, IRRS Team Leader (TL), Ms Rosa Sardella of Switzerland, IRRS Deputy Team Leader (DTL), and Mr Jean-René Jubin, IAEA Coordinator (NSNI/RAS).

The IRRS follow-up mission preparatory team held discussions on regulatory programmes and policy issues with the senior management of the CSN represented by Mr Juan-Carlos Lentijo, President of the CSN. As a result of the discussions, it was agreed that the review will cover the areas covered by the initial mission conducted in October 2018.

Ms. Teresa Vázquez, Technical Director for Nuclear Safety, CSN, and Mr. Javier Zarzuela, Technical Director for Radiation Protection, CSN, gave presentations on the national context, the current status of governmental and regulatory matters in Spain, significant changes in the regulatory landscape since 2018, and the results of their self-assessment to date.

The IAEA Coordinator presented the IRRS principles, including the process and methodology for conducting the follow-up mission. A discussion followed on the preliminary work plan for the implementation of the IRRS follow-up mission in Spain in January 2025.

The proposed composition of the IRRS team, as well as the logistics of the mission, including meeting and working places, counterparts and Liaison Officers, accommodation and transport arrangements were also discussed.

The Spanish Liaison Officers for the IRRS mission were confirmed as Ms. Teresa Vázquez, Technical Director for Nuclear Safety, CSN, and Mr. Javier Zarzuela, Technical Director for Radiation Protection, CSN.

Spain provided the IAEA with the Advance Reference Material (ARM) for IRRS team review in November 2024. In preparation for the mission, the members of the IRRS team reviewed the Spanish ARM and provided their initial impressions to the IAEA Coordinator prior to the start of the IRRS follow-up mission.

B) REFERENCES FOR THE REVIEW

The relevant IAEA safety standards, the Code of Conduct on the Safety and Security of Radioactive Sources, and the Code of Conduct of Research Reactors were used as review criteria. The complete list of IAEA publications used as the references for this mission is provided in Appendix VIII.

C) CONDUCT OF THE REVIEW

The initial IRRS follow-up team meeting was held on Sunday, 26 January 2025 at CSN headquarters, chaired by the IRRS Team Leader and the IAEA Coordinator. Discussions included the general overview, the scope and specific issues of the mission, clarification of the bases for the review and the background, as well as the context and objectives of the IRRS programme. Team member understanding of the review methodology was reinforced. The mission agenda was presented to the IRRS team. As required by the IRRS Guidelines, the reviewers presented their initial impressions of the ARM and highlighted significant issues to be addressed during the conduct of the mission.

The host Liaison Officers were present at the initial IRRS team meeting, as required by the IRRS Guidelines, and presented the logistical arrangements planned for the mission.

The IRRS entrance meeting was held on Monday, 27 January 2025 and was attended by senior management and staff of the CSN. Opening remarks were made by Mr. Juan-Carlos Lentijo, President of the CSN, and Mr. Scott Morris, IRRS Team Leader. Mr. Alfredo Mozas gave an overview of the Spanish context, the

regulated facilities and activities, and the national legal and regulatory framework for safety. He also discussed the results of the Spanish follow-up self-assessment, the main conclusions drawn from it, and the action plan prepared as a result of the pre-mission self-assessment.

During the IRRS mission, a review was conducted for all review areas within the agreed scope with the objective of reviewing Spain response to the recommendations and suggestions made during the initial mission in 2018. The review was conducted through meetings, interviews and discussions on the national legal, governmental and regulatory framework for safety. The IRRS team conducted its review in accordance with the mission programme set out in Appendix II.

The IRRS exit meeting was held on Monday, 3 February 2025. The opening remarks of the exit meeting were given by Mr. Joan Groizard, Secretary of State for Energy and were followed by the presentation of the results of the mission by the IRRS Team Leader, Mr Scott Morris. Host country first impressions were addressed by Mr. Juan Carlos Lentijo, President of CSN, and closing remarks were made by Ms. Anna Bradford, Director, Division of Nuclear Installation Safety, IAEA. Finally, the meeting was closed by Mr. Juan Carlos Lentijo.

An IAEA press release was issued at the end of the mission.

1. RESPONSIBILITIES AND FUNCTIONS OF THE GOVERNMENT

1.1. NATIONAL POLICY AND STRATEGY FOR SAFETY

There were no findings in this area in the initial IRRS mission.

1.2. ESTABLISHMENT OF A FRAMEWORK FOR SAFETY

There were no findings in this area in the initial IRRS mission.

1.3. ESTABLISHMENT OF A REGULATORY BODY AND ITS INDEPENDENCE

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS	
Observation: *In periods of fiscal austerity, CSN has had to negotiate exemptions from restrictions applied across the Civil Service and applied to, in particular, recruitment of new staff. This has occurred although the fees paid by the utilities have remained constant.*	
(1)	**BASIS: GSR Part 1 Requirement 3 states that** "*The government, through the legal system, shall establish and maintain a regulatory body, and shall confer on it the legal authority and provide it with the competence and the resources necessary to fulfil its statutory obligation for the regulatory control of facilities and activities."*
(2)	**BASIS: GSR Part 1 para. 2.8 states that** "*To be effectively independent from undue influences on its decision making, the regulatory body:* *(a) Shall have sufficient authority and sufficient competent staff;* *(b) Shall have access to sufficient financial resources for the proper and timely discharge of its assigned responsibilities;* *…* *(d) Shall be free from any pressures associated with political circumstances or economic conditions, or pressures from government departments, authorized parties or other organizations; …"*
S1	**Suggestion: The Government should consider making provisions to maintain the staffing level of CSN at the level necessary to achieve the safety objective and commensurate with the fees paid by the authorized parties.**

Changes since the initial IRRS mission

Suggestion 1: The analysis of the data collected by the CSN from 2018 to 2024 shows that the exemptions that had to be negotiated in the state budget law, as documented in the 2018 IRRS mission report, have become the rule in the years since. The Spanish Government regularly recognizes the CSN as priority sector regarding the public labour offer. This has allowed the CSN to open more public employment offers for the Technical Corps of Nuclear Safety and Radiation Protection than the projected number of staff retirements. Furthermore, positions that could not be filled in one year were reported and reopened in the following year, demonstrating the recognized important role of the CSN. An accurate estimation of the CSN's anticipated staff needs is central for the proper functioning of the hiring system. In this area, the CSN is to be commended for establishing a roadmap for its human resources management to address the main challenges in nuclear safety and radiation protection for the period 2024-2030. The roadmap is based on an analysis of past data and a detailed recording of job profiles for all CSN's staff functions, and defines five strategic lines of action related to talent attraction, management and retention, internal mobility mechanisms and further optimization of human resources at the CSN. The implementation of such a strategy is carried out

through a series of tailored programmes with the aim of ensuring that the CSN has adequate human resources to support its mission in the future.

Status of the initial mission findings

Suggestion 1 (S1) is closed as the budgeting process and a roadmap for human resources for the CSN have been established and the priority role of the CSN for nuclear safety and radiation protection is recognized by the Government.

1.4. RESPONSIBILITY FOR SAFETY AND COMPLIANCE WITH REGULATIONS

There were no findings in this area in the initial IRRS mission.

1.5. COORDINATION OF AUTHORITIES WITH RESPONSIBILITIES FOR SAFETY WITHIN THE REGULATORY FRAMEWORK

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS	
Observation: *The responsibilities for healthcare and regulatory control of medical exposure are distributed among: Ministry of Health, Ministry for the Ecological Transition, CSN and the Competent Autonomous Community. However, the IRRS team could not confirm if the Competent Autonomous Community are appropriately carrying out the effective control of medical exposure.*	
(1)	**BASIS: GSR Part 1 para. 2.18 states that** "*Where several authorities have responsibilities for safety within the regulatory framework for safety, the responsibilities and functions of each authority shall be clearly specified in the relevant legislation. The government shall ensure that there is appropriate coordination of and liaison between the various authorities concerned in areas such as:* *(3) Applications of radiation in medicine, industry and research;* *This coordination and liaison can be achieved by means of memoranda of understanding, appropriate communication and regular meetings. Such coordination assists in achieving consistency and in enabling authorities to benefit from each other's experience."*
(2)	**BASIS: GSR Part 1 Requirement 2 states that** "*The government shall establish and maintain an appropriate governmental, legal and regulatory framework for safety within which responsibilities are clearly allocated."*
R1	**Recommendation: The Government should establish mechanisms to ensure that the responsibilities assigned to the Competent Autonomous Community Health Authorities are effectively implemented.**
Observation: *The CSN and the Ministry of Health signed an MOU in 2010 to collaborate and cooperate on several topics. However, this MOU has not been systematically applied for the purpose of protection in medical practices.*	
(1)	**BASIS: GSR Part 1 para. 2.18 states that** "*Where several authorities have responsibilities for safety within the regulatory framework for safety, the responsibilities and functions of each authority shall be clearly specified in the relevant legislation. The government shall ensure that there is appropriate coordination of and liaison between the various authorities concerned in areas such as:* *(3) Applications of radiation in medicine, industry and research; …"*
S2	**Suggestion: The Ministry of Health and CSN should consider taking immediate steps toward applying the MOU for collaboration, signed in November 2010.**

Changes since the initial IRRS mission

Recommendation 1: Since 2019, the Ministry of Health has been updating the national legal requirements related to medical exposures with some new Royal Decrees already approved and other updates currently in the legislative approval process which are expected to be finalized by the end of 2025 or 2026.

The new Royal Decree 601/2019 on the justification and optimisation of the use of ionizing radiation for the radiation protection of persons during medical exposures establishes general conditions and minimum technical requirements with the goal of a consistent application of protection standards across the country while allowing regional health authorities to implement them within their own powers.

An Interterritorial Council is established as a permanent body for coordination, cooperation, communication and information sharing among the central and Autonomous Communities' health administrations. In parallel to the reform of the legal provisions, the Ministry of Health considered how to apply those provisions in practice and, especially, how to coordinate and monitor the activities with the health authorities of the Autonomous Communities. The implementation of regulatory provisions is monitored through regular analysis and reporting as required by the updated Patient Safety Strategy: the last General Evaluation issued in 2021 with a series of recommendations on how to further improve patient safety is an example of the efforts made by the health authorities in this area. The Ministry of Health has also pursued activities to raise awareness and debate of current issues by organising scientific workshops and programmatic exchanges between the Ministry of Health, the health authorities of the Autonomous Communities and medical practitioners. The CSN is also involved in these exchanges as it covers the interface between medical and occupational exposure. The Ministry of Health, interfacing with the CSN on medical and occupational exposures, is committed to complete the actions in a timely manner and to establish further practical improvements as needed.

Suggestion 2: After analysing the issues related to the implementation of the 2010 Memorandum of Understanding, the Ministry of Health and the CSN concluded a new agreement in 2023, which includes improved modalities for effective cooperation and information exchange. Since then, biannual meetings have been held to discuss issues of medical and occupational exposures, based on information gained through the participation in national and international forums (e.g., HERCA, UNSCEAR, SAMIRA), and current developments in medical regulations. During these meetings, key information on incidents and accidents with a potential impact on the radiation protection of patients and exposed workers is exchanged, as well as relevant current topics.

Status of the initial mission findings

Recommendation 1 (R1) is closed on the basis of progress made and confidence in effective completion in due time as the legal framework has been substantially improved with legislative updates well underway, the practical implementation of the regulatory provisions has been improved and monitoring mechanisms have been established.

Suggestion 2 (S2) is closed as a new collaboration agreement between the CSN and the Ministry of Health has been established and successfully implemented.

1.6 SYSTEM FOR PROTECTIVE ACTIONS TO REDUCE EXISTING OR UNREGULATED RADIATION RISKS

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS
Observation: *Although there is a Royal Decree under development addressing liability issues for radiologically contaminated sites, including the requirement for cooperation with competent authorities, currently CSN has no formal cooperation agreements in place relating to the management of contaminated sites.*

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS	
(1)	**BASIS: GSR Part 1 para. 2.26 states that** "*The regulatory body shall provide …. It shall establish the regulatory requirements and criteria for protective actions in cooperation with the other authorities involved, and in consultation with interested parties, as appropriate."*
(2)	**BASIS: GSR Part 1 para. 2.18 states that** "*Where several authorities have responsibilities for safety within the regulatory framework for safety, the government shall make provision for the effective coordination of their regulatory functions, to avoid any omissions or undue duplication and to avoid conflicting requirements being placed on authorized parties. …"*
S3	**Suggestion: CSN should consider establishing cooperation agreements with other competent authorities regarding the management of contaminated sites.**

Changes since the initial IRRS mission

Suggestion 3: An amendment to the nuclear energy law was introduced in 2022 via a Royal Decree Law that states that the Government, through the Ministry of Ecological Transition and Demographic Challenge (MITECO), is the competent authority for the management of contaminated sites. According to the legal provisions, the MITECO is responsible for the declaration of a soil or land as (radiologically) contaminated and for the assignment of responsibilities for the decontamination and restoration of such sites. The MITECO is bound by an assessment on nuclear safety and radiation protection provided in writing by the CSN. The CSN's assessment of a (potentially) radiologically contaminated site may be solicited directly by the MITECO. Public comments (or whistleblowing notifications) may also trigger CSN actions for (potentially) contaminated sites too.

The Autonomous Communities may ask for CSN's assessment report on the radiological aspects of conventional contaminated sites in fulfilment of Article 2.m of its Creation Act (Law 15/1980). In such cases, CSN sends its report to the Autonomous Community and a copy to MITECO.

Informal, direct communication mechanisms are in place between the CSN and the MITECO to ensure that the competent authorities share knowledge on the current dossiers and can better coordinate their efforts. The MITECO can use established communication and coordination lines with the regional authorities in the so-called sectorial conferences to address, among others, the topic of contaminated sites. It was noted that the MITECO along with the CSN, whenever deemed appropriate due to the existence of regulatory novelties or relevant dossiers, organises meetings with representatives of the Autonomous Communities on matters of interfacing responsibilities, such as category 2 and 3 radioactive facilities, X-rays for medical diagnosis, orphan radioactive sources, etc., in order to coordinate the administrative actions in these areas. Likewise, the MITECO together with the CSN, plans to convene meetings with the Autonomous Communities affected, regarding the management of radiologically contaminated soils.

Status of the initial mission findings

Suggestion 3 (S3) is closed on the basis of progress made and confidence in effective completion in due time as new and amended legislative provisions clearly define the roles, responsibilities and processes for the management of contaminated sites and the MITECO is leading the coordination efforts with all the involved authorities at the state and regional level.

1.7. PROVISIONS FOR THE DECOMMISSIONING OF FACILITIES AND THE MANAGEMENT OF RADIOACTIVE WASTE AND OF SPENT FUEL

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS	
Observation: *The General Radioactive Waste Plan (GRWP) has not been revised since 2006. ENRESA has provided updates in 2010, 2014 and 2015 however these updated versions have not undergone formal approval by the government. Consequently, there is no formal basis for the current decision making in terms of the long-term management of radioactive waste, raising concerns regarding the sustainability of the current strategy for radioactive waste management.*	
(1)	**BASIS: GSR Part 1 Requirement 10 states that** "*The government shall make provision for the safe decommissioning of facilities, the safe management and disposal of radioactive waste arising from facilities and activities, and the safe management of spent fuel.* *2.28. Decommissioning of facilities and the safe management and disposal of radioactive waste shall constitute essential elements of governmental policy and the corresponding strategy over the lifetime of facilities and the duration of activities [3, 7]. The strategy shall include appropriate interim targets and end states. Radioactive waste generated in facilities and activities necessitates special consideration because of the various organizations concerned and the long timescales that may be involved. The government shall enforce continuity of responsibility between successive authorized parties."*
(2)	**BASIS: GSR Part 5 Requirement 2 states that** "*To ensure the effective management and control of radioactive waste, the government shall ensure that a national policy and a strategy for radioactive waste management are established. The policy and strategy shall be appropriate for the nature and the amount of the radioactive waste in the State, shall indicate the regulatory control required, and shall consider relevant societal factors. The policy and strategy shall be compatible with the fundamental safety principles and with international instruments, conventions and codes that have been ratified by the State. The national policy and strategy shall form the basis for decision making with respect to the management of radioactive waste."*
R2	**Recommendation: The Government should take immediate steps towards making decisions regarding updates to the GRWP such that the plan can inform decision making to ensure the continued safe and sustainable management, including interim storage and disposal, of radioactive waste in Spain.**

Recommendation 2 will be addressed by the ARTEMIS follow-up mission.

1.8. COMPETENCE FOR SAFETY

There were no findings in this area in the initial IRRS mission.

1.9. PROVISION OF TECHNICAL SERVICES

There were no findings in this area in the initial IRRS mission.

2. THE GLOBAL SAFETY REGIME

2.1. INTERNATIONAL OBLIGATIONS AND ARRANGEMENTS FOR INTERNATIONAL COOPERATION

There were no findings in this area in the initial IRRS mission.

2.2. SHARING OF OPERATING EXPERIENCE AND REGULATORY EXPERIENCE

There were no findings in this area in the initial IRRS mission.

3. RESPONSIBILITIES AND FUNCTIONS OF THE REGULATORY BODY

3.1. ORGANIZATIONAL STRUCTURE OF THE REGULATORY BODY AND ALLOCATION OF RESOURCES

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS	
Observation: *As the organisational structure of CSN is established by statute, CSN has limited flexibility to adjust its organisation, as government approval through statutory amendment would be required.*	
(1)	**BASIS: GSR Part 1 para. 4.5 states that** "*The regulatory body has the responsibility for structuring its organization and managing its available resources so as to fulfil its statutory obligations effectively."*
S4	**Suggestion: CSN should consider engaging in a discussion with government, to obtain the flexibility to adjust its organisational structure.**

Changes since the initial IRRS mission

According to its Statute, approved by Royal Decree 1440/2010, the CSN can draft its Status, which shall then be approved by the Government, as is the case for all the public law entities in Spain. However, the government cannot change the status and/or the organizational structure of the CSN on its own.

The IRRS team was informed that, through different developments over time, the CSN has adapted its status as necessary to take into account the evolution of regulations and issues. In addition, the current legal framework allows the CSN to adapt the resources within its internal organization to align it with its goals and needs. The CSN Human Resources Plan shows that it has already adapted, when necessary, its available resources according to the situations and the issues in the field of its missions.

Discussions between the CSN and the government have made it possible to maintain the CSN's autonomy while implementing new measures on human resources management in the public administration, established by the Royal Decree-law 6/2023 of 19 December 2023. These measures take into account the autonomy of the CSN regarding its organizational matters and human resources management. Specifically, Royal Decree-law 6/2023 states that the entities of the state public sector with their own legislation and special organizational autonomy may maintain and update their legal exceptions, and shall continue to be governed by their specific rules or agreements, adapting them while respecting their specificities.

Status of the initial mission findings

Suggestion 4 (S4) is closed as the CSN has the responsibility for structuring its organization and managing its available resources so as to fulfil its statutory obligations effectively.

3.2. EFFECTIVE INDEPENDENCE IN THE PERFORMANCE OF REGULATORY FUNCTIONS

There were no findings in this area in the initial IRRS mission.

3.3. STAFFING AND COMPETENCE OF THE REGULATORY BODY

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS
Observation: *CSN provides significant training for its staff but lacks a systematic approach. This observation applies to defining the training and qualifications required for specific tasks and positions (e.g. inspectors or emergency responders).*

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS	
(1)	**BASIS: GSG-12 para. 6.45 states that** "*Inspectors should be experienced and capable of working without direct supervision and should have the necessary skills so as to be able to represent the regulatory body adequately without being drawn into the authorized party's decision making process."*
(2)	**BASIS: GSG-13 para. 3.262 states that** "*The regulatory body should issue internal guidance for its inspectors on performing regulatory inspections. … Each inspector should be given adequate training in following this guidance."*
(3)	**BASIS: GSR Part 7 para. 6.28 states that** "*The operating organization and response organizations shall identify the knowledge, skills and abilities necessary to perform the functions specified in Section 5. The operating organization and response organizations shall make arrangements for the selection of personnel and for training to ensure that the personnel selected have the requisite knowledge, skills and abilities to perform their assigned response functions. The arrangements shall include arrangements for continuing refresher training on an appropriate schedule and arrangements for ensuring that personnel assigned to positions with responsibilities in an emergency response undergo the specified training."*
S5	**Suggestion: CSN should consider enhancing its training activities by establishing a more systematic approach to training and by considering formal qualification for certain positions.**
Observation: *Although CSN's approach to human resource planning is captured in several different documents, a comprehensive and consolidated Human Resource Plan would identify the long-term resource needs, including the required competencies for emerging technologies.*	
(1)	**BASIS: GSR Part 1 para. 4.11 states that** "*A human resource plan shall be developed that states the number of staff necessary and the essential knowledge, skills and abilities."*
(2)	**BASIS: GSR Part 1 para. 4.12 states that** "*The human resources plan for the regulatory body shall cover recruitment and, where relevant, rotation of staff in order to obtain staff with appropriate competence and skills, and shall include a strategy to compensate for the departure of qualified staff."*
(3)	**BASIS: GSG-13 para. 6.24 states that** "*The introduction of new types of facilities or new activities, the introduction of novel technologies, the ageing of facilities or the passage of a facility to another stage of its lifetime should be considered in the planning of competences and in the adaptation of training programmes".*
S6	**Suggestion: CSN should consider creating a consolidated and comprehensive Human Resource Plan.**

Changes since the initial IRRS mission

Suggestion 5: Since the 2018 IRRS mission, the CSN developed and implemented a Systematic Approach to Training (SAT) methodology, taking as main references the following IAEA documents:

- Safety Reports Series Nº 79 (hereafter, SRS-79): Managing Regulatory Body Competence;
- IAEA TECDOC 1757: Methodology for the Systematic Assessment of the Regulatory Competence Needs (SARCoN) for Regulatory Bodies of Nuclear Installations.

All CSN staff positions have been analysed. The specific competencies (knowledge, skills and abilities) associated with each position and the training objectives to be achieved in order to acquire and maintain those competences have been established. The competences needed are categorized according to the quadrant model of competences outlined in SRS-79.

A computer application has been developed to support the implementation of the SAT methodology and the specific training needs for all CSN staff have been identified. The training requirements are discussed during the annual staff evaluation.

The CSN is currently developing its training programme for the next four years to come, starting in 2025.

Suggestion 6: Since the 2018 IRRS mission, the CSN has developed two main documents dealing with human resources:

- "The Human Resources of CSN 2014-2030," which is a quantitative and prospective analysis of the human resources of the CSN; and
- a Human Resources Plan, approved in 2024, which analyzes the current CSN staff and projects future hiring needs, primarily to account for staff retirements.

Both of these documents consider staff turnover, retirements and age pyramids, and will help the CSN to prepare recruitments and to anticipate future human resources needs. The IRRS follow-up team was also informed that an action is already planned by the CSN Human Resources Plan under Activity 10.2 "Reinforcement of those units that need it in the light of the challenges."

Though not yet established, the CSN plans to develop a list of the knowledge, skills and abilities that will be impacted and/or needed in the years to come to account ageing of regulated facilities, new activities, or predictable issues in the nuclear and radiation protection fields.

Status of the initial mission findings

Suggestion 5 (S5) is closed as the CSN has identified the knowledge, skills and abilities necessary to perform the functions and is implementing the IAEA Systematic Approach to Training methodology.

Suggestion 6 (S6) is closed on the basis of progress made and confidence in effective completion in due time as the CSN has created a consolidated and comprehensive human resource plan and has planned an action to maintain and adapt, where appropriate, the CSN competencies.

3.4. LIAISON WITH ADVISORY BODIES AND SUPPORT ORGANIZATIONS

There were no findings in this area in the initial IRRS mission.

3.5. LIAISON BETWEEN THE REGULATORY BODY AND AUTHORIZED PARTIES

There were no findings in this area in the initial IRRS mission.

3.6. STABILITY AND CONSISTENCY OF REGULATORY CONTROL

There were no findings in this area in the initial IRRS mission.

3.7. SAFETY RELATED RECORDS

There were no findings in this area in the initial IRRS mission.

3.8. COMMUNICATION AND CONSULTATION WITH INTERESTED PARTIES

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS
Observation: *The regulatory body does not require all relevant authorized parties to inform the public about radiation risks and other relevant information associated with their facilities or the conduct of their activity.*

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS	
(1)	**BASIS: GSR Part 1 para. 4.68 states that** "*The authorized party shall inform the public about the possible radiation risks (arising from operational states and accidents, including events with a very low probability of occurrence) associated with the operation of a facility or the conduct of an activity. This obligation shall be specified in the regulations promulgated by the regulatory body, in the authorization or by other legal means."*
R3	**Recommendation: The regulatory authorities should require the relevant authorised parties to inform the public about the possible radiation risks associated with their facilities and activities, in accordance with a graded approach.**

Changes since the initial IRRS mission

Recommendation 3: In 2024, the Royal Decree 1217/204 approved a new regulation on nuclear and radioactive facilities and other activities related to exposure for ionizing radiation, and includes provisions for the creation and operation of so-called Local Committees for Information for every nuclear facility. The Local Committees for Information are comprised of representatives from national, regional and local government administrations, as well from the authorized parties. The objective of the Committees is to inform local stakeholders about the activities at the nuclear facility and other issues of interest. The meetings of the Committees are open to the public and are organized once per year. In spite of this, there is no detailed regulatory requirement for the content of Local Committee meetings.

The Royal Decree 586/2020 establishes requirements for information to be provided in the case of a nuclear or radioactive emergency, including information on necessary prevention and protection measures to the population that may be affected and to those that are actually impacted by the event. This decree mandates that directors of the emergency response activities are obliged to provide prior information to the population. It also requires that the owners of nuclear power plants and those centres that may give rise to significant radiological risks outside the site, shall be obliged to do so as well. The preventive prior information programmes to be given to the public have to be established in accordance with the corresponding guidelines which shall be approved by the competent authorities, following a favourable report by the CSN.

Regarding to transparency and to the information on the nuclear safety to be made to the general public, the Royal Decree 1400/2018 approving the regulation on nuclear safety in nuclear facilities sets provisions for the CSN and the authorized parties to inform the people within the organisation and, when necessary, other stakeholders, of information relevant to safety objectives.

Status of the initial mission findings

Recommendation 3 (R3) is closed on the basis of progress made and confidence in effective completion in due time as provision have been taken to require the authorized parties to inform the public about the possible radiation risks associated with their facilities and activities and that they have to be detailed in guidelines.

New observation made during the follow-up mission

The CSN instruction number IS-19 on the requirements of the nuclear facilities management system sets in its article 7.3.16 that information of relevance for the objectives of safety, health, environmental protection, quality and economic issues shall be communicated to the personnel of the organisation and, when necessary, to other stakeholder groups.

The IRRS team considers that the CSN should establish guidance documents to define the content of the information that has to be given to the public in application of the Royal Decrees 1217/2024, 586/2020 and 1400/2018.

RECOMMENDATIONS AND SUGGESTIONS	
Observation: Although some provisions on the information of the public about the possible radiation risks have been defined in different royal decrees (1217/2024, 586/2020 and 1400/2018), the detailed guidance documents to implement those provisions are not yet established.	
(1)	**BASIS: GSR Part 1 para. 4.68 states that** "*The authorized party shall inform the public about the possible radiation risks (arising from operational states and accidents, including events with a very low probability of occurrence) associated with the operation of a facility or the conduct of an activity. This obligation shall be specified in the regulations promulgated by the regulatory body, in the authorization or by other legal means."*
SF1	**Suggestion: The CSN should consider establishing guidance documents about the information about possible radiation risks delivered to the public by authorized parties as required by legal provisions, in accordance with a graded approach.**

4. MANAGEMENT OF THE REGULATORY BODY

4.1. RESPONSIBILITY AND LEADERSHIP FOR SAFETY

There were no findings in this area in the initial IRRS mission.

4.2. RESPONSIBILITY FOR INTEGRATION OF SAFETY INTO THE MANAGEMENT SYSTEM

There were no findings in this area in the initial IRRS mission.

4.3. THE MANAGEMENT SYSTEM

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS	
Observation: *The CSN management system does not include provisions to identify and assess organizational changes necessary to optimise its organisational structure and composition for efficiency and effectiveness.*	
(1)	**BASIS: GSR Part 2 para. 4.13 states that** "*Provision shall be made in the management system to identify any changes (including organizational changes and the cumulative effects of minor changes) that could have significant implications for safety and to ensure that they are appropriately analysed."*
(2)	**BASIS: GSG 12 Appendix II para II 24 states that** "*The regulatory body should put in place a process for managing organizational change for changes made in response to external or internal initiatives. The process should ensure that the potential impact of proposed changes on the effectiveness of the regulatory body is systematically assessed. Changes should not be implemented without adequate review and should be modified (e.g. by means of compensatory measures) if they impact negatively on the effectiveness with which the regulatory body discharges its mandate. "*
S7	**Suggestion: CSN should consider establishing a process to identify, assess and implement organisational changes.**
Observation: *CSN has identified the records required for inclusion in its management system. However, the CSN has not established associated retention times consistent with the statutory requirements and ensuring the proper implementation of the management system.*	
(1)	**BASIS: GSR Part 2 para. 4.20 states that** "*Retention times of records and associated test materials and specimens shall be established to be consistent with the statutory requirements and with the obligations for knowledge management of the organization. The media used for records shall be such as to ensure that the records are readable for the duration of the retention times specified for each record."*
(2)	**BASIS: GSG 12 Appendix II para II 14 states that** "*The process for control of records should ensure that records:* *− Are categorized;* *− Are registered upon receipt;* *− Are readily retrievable;* *− Are indexed and placed in their proper locations in the files of the record facility with the retention times clearly specified;* *− Are stored in a controlled and safe environment;* *− Are stored in appropriate storage media;*

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS	
	– Remain unchanged under normal circumstances."
R4	**Recommendation: CSN should establish a record retention schedule to define the required retention times for each type of records, the associated responsibilities, the record format and support, and the record storage location.**

Changes since the initial IRRS mission

Suggestion 7: The CSN Management System Manual (MSG) (Rev. 4), approved in March 2024, provides overarching provisions for the management of organisational change and emphasizes that changes that may have an impact on safety, should be identified, analysed, controlled, and monitored. It states that the impact of such changes, including the cumulative impact of changes, on safety and on the performance of the CSN in performing its duties has to be considered in accordance with a graded approach.

The provisions of the MSG state that any proposed organizational change should be thoroughly justified prior to implementation. This justification should include:

- A description of the planned change;
- A budgetary feasibility study; and
- If applicable, an assessment of the potential impact on the performance of the organization.

There are no detailed provisions, such as a written procedure, to support the implementation of the organizational change process to ensure consistent and effective management of organizational changes. Nevertheless, the IRRS team reviewed examples of organizational change that were processed in compliance with management system expectations. The IRRS team was also informed that the need to establish a formal procedure for managing organizational changes is already foreseen by the CSN Human Resources Plan under Activity 10.2 "Reinforcement of those units that need it in the light of the challenges."

Recommendation 4: Section 2.6 of the MSG (Rev. 4) provides overarching provisions for the management and control of management system documentation, including records, which are defined as the documented results or evidence of activities performed. Records may be in paper or electronic format.

Further details are outlined in CSN procedure PG.XI.04 (Rev. 3), approved 02 August 2021. This procedure describes the arrangements for the preparation, editing, control and archiving of management system documentation. Section 5.5 states that records are specified by each procedure and shall be kept in a legible form and will be readily identifiable and retrievable throughout the period of validity of the process, activity or document to which they relate. The IRRS team reviewed several procedures covering different processes and concluded that the records are properly identified.

The CSN provided the IRRS team with a retention schedule developed in 2016 and revised in October 2018. The IRRS team noted that this document is not part of the management system documentation, and it is only known and used by the staff responsible for managing the CSN's archives. The IRRS team was informed that the retention schedule will be reviewed by the working group on documentation management, which was reactivated in 2024. Amongst others, the aim of this working group is to include the retention schedule in the management system documentation. It was emphasized that the retention schedule will cover all records identified by the management system.

Status of the initial mission findings

Suggestion 7 is closed based on the progress made and with confidence in its effective completion as the CSN has included provisions in its management system manual and there is a plan to document the existing process for organizational changes in a formal procedure.

Recommendation 4 is closed on the basis of progress made and confidence in its effective completion in due time as the existing retention schedule will be reviewed then included into the management system documentation.

4.4. MANAGEMENT OF RESOURCES

There were no findings in this area in the initial IRRS mission.

4.5. MANAGEMENT OF PROCESSES AND ACTIVITIES

There were no findings in this area in the initial IRRS mission.

4.6. CULTURE FOR SAFETY

There were no findings in this area in the initial IRRS mission.

Policy issue discussion: Safety culture of regulatory body

Since the issuance of the CSN's safety culture policy in 2017, the CSN has been actively working on its culture for safety. A safety culture self-assessment, conducted from 2020 to 2021, identified challenges, such as the need to establish a leadership model to improve the collaboration and teamwork, and to foster questioning attitudes across the organization. In response, the CSN implemented actions to improve its safety culture. A new project was initiated in 2023, which is expected to be completed in 2025, to develop a comprehensive strategy and an action plan to enhance CSN's safety culture.

Spain expressed interest in having a focused policy discussion on the safety culture of regulatory body in order to gain insights from the IRRS team.

The policy discussion highlighted the following key items:

- Leadership models should be developed internally with input from all employees, and should set out principles, values, and expectations, and also promote ownership in all staff.
- Leaders should act as role models, be visible in the field. They should ensure decisions apply to all, including themselves. Managers should prioritize making time for their staff to show they care and value their input.
- Accountability and leadership should be promoted at all levels, regardless of people's roles.
- It is important to be open to new and even negative feedback. Creating a safe space for employees to express their opinions fosters a culture of reporting. Open discussion and the use of both formal and informal mechanisms to engage employees, should be encouraged.
- Implementing feedback signals a commitment to a learning environment.
- Changing mindsets is challenging but crucial for organizational performance. While differing opinions persist, leveraging the most engaged can help drive change.

4.7. MEASUREMENT, ASSESSMENT AND IMPROVEMENT

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS	
Observation: *Self-assessment of the management system is limited to the evaluation of the implementation progress of the annual workplan.*	
(1)	**BASIS: GSR Part 1 para. 6.4 states that** "*Independent assessments and self-assessments of the management system shall be regularly conducted to evaluate its effectiveness and to identify opportunities for its improvement. Lessons and any resulting significant changes shall be analyzed for their implications for safety.*"
R5	**Recommendation: CSN should develop and implement provisions to conduct regular self-assessments of its management system.**
Observation: *Although CSN has issued a comprehensive policy on safety culture, the system for assessments of leadership for safety and safety culture is not yet implemented.*	
(1)	**BASIS: GSR Part 2 Requirement 14 states that** "*Senior management shall regularly commission assessments of leadership for safety and of safety culture in its own organization.*"
S8	**Suggestion: CSN should consider conducting regular assessments of its safety culture.**

Changes since the initial IRRS mission

Recommendation 5: Section 6.2, "Analysis, Evaluation, and Audits" of MSG (Rev. 4) states: "Independent assessments and self-assessments of the management system shall be carried out periodically to review its effectiveness and identify opportunities for improvement."

Furthermore, Procedure PA.V.03 "Annual Work Plan", approved in November 2020, describes the activities necessary for the preparation, approval and monitoring of the Annual Work Plan (PAT) of the CSN. This procedure states that: "In order to establish the activities for the following year and identify possible corrective or improvement actions, the sub-directorates, units and the Cabinet of the President of the CSN (GPT) will carry out a self-assessment of the work performed…" PA.V.03 also provides a non-exhaustive list of inputs to consider when conducting the self-assessment including: Status of the implementation of the PAT; non-conformities; corrective and preventive actions; and results of other evaluations.

The IRRS team was informed that these self-assessments are not required to be documented. The IRRS encouraged the CSN to review the list of records that should be kept as evidence for self-assessments.

Suggestion 8: The importance of in-house safety culture is recognized by the CSN through its established safety culture policy and the provisions incorporated into its management system, including provisions for both periodic self-assessments and independent assessments of CSN's culture for safety.

In 2020, an independent (external) assessment of CSN's safety culture was initiated as part of CSN Strategic Plan for 2020-2025. This assessment, completed in 2021, identified both strengths and areas for improvement, which were subsequently addressed to improve CSN's safety culture.

For the period 2023-2025, the CSN launched a new project to define a comprehensive strategy and action plan to further improve CSN's safety culture. At the time of the mission, the assessment of CSN's current safety culture had been completed. A preliminary action plan had been drafted and was based on nine actions, including the objective of conducting periodic safety culture self-assessments.

Status of the initial mission findings

Recommendation 5 (R5) is closed as the management system establishes clear expectations for conducting self-assessments.

Suggestion 8 (S8) is closed as the CSN conducted an assessment of its safety culture and has plans to conduct periodic assessments in the future.

5. AUTHORIZATION

5.1. GENERIC ISSUES

There were no findings in this area in the initial IRRS mission.

5.2. AUTHORIZATION OF NUCLEAR POWER PLANTS

There were no findings in this area in the initial IRRS mission.

5.3. AUTHORIZATION OF FUEL CYCLE FACILITIES

There were no findings in this area in the initial IRRS mission.

5.4. AUTHORIZATION OF RADIOACTIVE WASTE MANAGEMENT FACILITIES

There were no findings in this area in the initial IRRS mission.

5.5. AUTHORIZATION OF RADIATION SOURCES FACILITIES AND ACTIVITIES

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS	
Observation: *While the Spanish legal and regulatory framework provides a basis for the authorization of radiation sources facilities and activities there are gaps in its coverage, including:* *1) exemptions are not to be granted for practices deemed to be not justified;* *2) the provision for submission of a notification of an intent to operate a facility or to conduct an activity, consistent with a graded approach;* *3) categorisation of sealed sources is not fully in line with the required categorization scheme.*	
(1)	**BASIS: GSR Part 1 Requirement 33 states that** *"Regulations and guides shall be reviewed and revised as necessary to keep them up to date, with due consideration taken of relevant international safety standards and technical standards and of relevant experience gained."*
(2)	**BASIS: GSR Part 3 Requirement 6 states that** "*The application of the requirements of these Standards, i.e. GSR Part 3, in planned exposure situations shall be commensurate with the characteristics of the practice or the source within a practice, and with the likelihood and magnitude of exposures."*
R6	**Recommendation: The Government should revise the legal and regulatory framework to comply with the requirements of GSR Part 3 for strengthening the control over radiation sources facilities and activities.**

Changes since the initial IRRS mission

Recommendation 6: Article 7 of Royal Decree 1029/2022, issued in 2022 established the justification to ensure that any activity involving exposure to radiation provides a net societal benefit, outweighing potential risks. This provision aligns with the principle that practices not justified would not be granted exemptions. Further, Annex II of Royal Decree 1217/2024 issued in 2024 established those specific practices that are exempted.

Spain's regulatory programme requires a notification process for facilities or activities of high complexity, those categorized as first-category risks, or practices introduced for the first time in the country. Facilities

or activities deemed low-risk, or those already under Spain's regulatory framework, are exempted from separate notifications. To support compliance, the CSN publishes guidance documents (Circulares informativas) outlining the requirements for the application of authorization for facilities and activities.

Although the categorization of sealed sources in Spain does not fully align with the IAEA safety standards, Royal Decree 1308/2011 establishes a three-category for sealed sources based on the potential risks associated with specific practices, expressing hazard, danger or chance of harmful consequences associated with actual or potential exposures. This approach aligns with the European Union (EU) Directive 2013/59, which is obligatory for the EU Member States. Additionally, the CSN applies the requirements for authorization in interface with security under Royal Decree 1217/2024, which adheres to the categorization of sources established in the IAEA Safety Standards. As a result, the categorization of sources for Categories 1, 2, and 3 effectively aligns with the IAEA classification scheme.

This streamlined approach reflects Spain's commitment to adopting a risk-based regulatory approach.

Status of the initial mission findings

Recommendation 6 (R6) is closed as the publication of the Royal Decree 1029/2022 established justification in Chapter 7 and Annex II for exemption. A notification process has been established for facilities or activities of high complexity and three categories of radioactive sources.

5.6. AUTHORIZATION OF DECOMMISSIONING ACTIVITIES

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS	
Observation: *CSN instruction IS-26 §8.3 states that all relevant information from the installation's design, construction and operation stages that might make the subsequent decommissioning activities easier must be recorded and kept. However, with respect to transfer of knowledge and of information about the facility important to nuclear safety and radiation protection, only the non-binding safety guide 10.13., is available and deals with such transfer in case of transfer of responsibility for the facility to ENRESA (for decommissioning).*	
(1)	**BASIS: GSR Part 6 para. 4.4 states that** "*Individuals performing decommissioning actions shall have the necessary skills, expertise and training to perform decommissioning safely. Provisions shall be made to ensure that institutional knowledge about the facility is obtained and made accessible and, as far as possible, that key staff from the facility are retained."*
S9	**Suggestion: CSN should consider establishing regulatory provisions requiring the authorized parties, as a prerequisite for the transfer of responsibility of the facility, to ensure the transmission of institutional knowledge.**
Observation: *The current statute requires CSN to verify the completion of the dismantling activities, however, current regulations do not require authorized parties to submit a final decommissioning report as part of the application file for license termination.*	
(1)	**BASIS: GSR Part 6 para. 9.1 states that** "*A final decommissioning report shall be prepared by the licensee to demonstrate that the end state of the facility as specified in the approved final decommissioning plan has been reached. This report shall be submitted to the regulatory body for review and approval."*
S10	**Suggestion: CSN should consider updating the regulatory provisions to add a requirement for licensees to submit a final decommissioning report as part of the application for license termination, including a description of the contents of the final decommissioning report.**

Changes since the initial IRRS mission

Suggestion 9: The CSN Instruction IS-45 on basic safety requirements for the safe decommissioning of nuclear facilities, applicable during the design, construction, and operation phases, was issued on January 19, 2022. The CSN Instruction IS-45 requires in Chapter 3 that the documents and records containing information necessary for the decommissioning of the installation shall be considered permanent records and shall be maintained for the lifetime of the installation and, where appropriate, transferred to the holder of the decommissioning authorization.

Suggestion 10: The Royal Decree 1217/2024, approving the Regulation on nuclear and radioactive facilities, as well as other activities related to exposure to ionizing radiation, was officially approved on December 3, 2024. The submission and content of the final decommissioning report is addressed in Article 37 and is verified during the CSN's review of the application.

Status of the initial mission findings

Suggestion 9 (S9) is closed as CSN Instruction IS-45 sets all necessary requirements for recording and transferring information.

Suggestion 10 (S10) is closed as the Royal Decree 1217/2024 establishes a requirement for applicants to submit a final decommissioning report with their application for license termination.

5.7. AUTHORIZATION OF TRANSPORT

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS	
Observation: *While the Spanish legal framework contains provisions for approval responsibilities, there are gaps in its coverage regarding approval for designs of low dispersible radioactive material, radiation protection programme for special use vessels, calculation of unlisted radionuclide values and calculation of alternative activity limits for an exempt consignment of instruments and articles. In addition, neither CSN nor any other authority is designated to receive the required notification for the first shipment of any package requiring competent authority approval.*	
(1)	**BASIS: GSR Part 1 para. 2.5 states that** *"The government shall promulgate laws and statutes to make provision for an effective governmental, legal and regulatory framework for safety. This framework for safety shall set out the following:…(3) The type of authorization that is required for the operation of facilities and conduct of activities,…."*
(2)	**BASIS: SSR-6 para. 802 states that** "*Competent authority approval shall be required for the following: (a)(ii) Designs for low dispersible radioactive material, …. (d) Radiation protection programme for special use vessels, (e) Calculation of radionuclide values that are not listed in Table 2, (f) Calculation of alternative activity limits for an exempt consignment of instruments or articles."*
(3)	**BASIS: SSR-6 para. 557 states that** "*Before the first shipment of any package requiring competent authority approval, the consignor shall ensure that copies of each applicable competent authority certificate applying to that package design have been submitted to the competent authority of the country of origin and each country through or into which the consignment is to be transported."*
R7	**Recommendation: The Government should assign the responsibility for all approval types according to the IAEA Transport Regulations and identify the competent authority for notification regarding the first shipment of an approved package in Spain.**

Changes since the initial IRRS mission

Recommendation 7: The Royal Decree 1217/2024, approving the Regulation on nuclear and radioactive facilities, and other activities related to exposure to ionizing radiation, was officially approved on 3 December 2024. It outlines the responsibilities for approvals and the requirements for shipment notifications.

Status of the initial mission findings

Recommendation 7 (R7) is closed as all aspects are addressed by the new Royal Decree 1217/2024.

5.8. AUTHORIZATION ISSUES FOR OCCUPATIONAL EXPOSURE

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS	
Observation: *Although limits for occupationally workers are defined in the Spanish regulations, the limits for the lens of the eyes for the occupationally workers and for students and trainees between 16 and 18 years old do not comply with the required standards as described in Schedule III of the GSR Part 3.*	
(1)	**BASIS: GSR Part 3 para. 3.26 states that** *"The government or the regulatory body shall establish dose limits for occupational exposure and public exposure, and registrants and licensees shall apply these limits"*
R8	**Recommendation: The Government should update the dose limits for the lens of the eyes to ensure full compliance with the IAEA Safety Standards.**

Changes since the initial IRRS mission

Recommendation 8: Chapter III of Royal Decree 1029/2022, which adopts the European Union Directive 2013/59, specifically addresses dose limits for exposed workers, students, apprentices, and the public. The decree establishes the following equivalent dose limits for the lens of the eye:

- Exposed Workers: The limit for the equivalent dose is 100 mSv over any five consecutive years, with a maximum of 50 mSv in any single year.
- Students and Apprentices (aged 16–18 years): The equivalent dose limit is set at 15 mSv per year, which is more conservative than the 20 mSv per year limit established in GSR Part 3 (III.1) of the IAEA standards.
- Public: The equivalent dose limit is set at 15 mSv per year.

While these limits align with the European Directive 2013/59 and are mandatory for EU Member States, they differ from (more conservative than) the IAEA General Safety Requirements (GSR) Part 3, particularly for students and apprentices, where the IAEA standard allows a limit of 20 mSv per year.

In order to evaluate the practical implication of the more conservative limit of 15 mSv per year for students and apprentices, the CSN conducted two research projects related to dose to the lens of the eye. The first project (Project EDOCI, completed in 2023), was an assessment of occupational doses to the lens of eyes in medical and research facilities. As result the CSN presented the methodology in the establishment of individual dosimetry programmes for the lens of the eyes in the medical and research facilities oriented to Professional Association, radiation protection services, and exposed workers. The second project (Project CALIDOSIS, completed in 2024), studied the radiological response of a set of dosimeters for the lens of the eye in compliance with the requirements established in the IEC standard 62387.

Status of the initial mission findings

Recommendation 8 (R8) is closed as the Royal Decree 1029/2022 was published, which aligns the lens dose limit for workers and the public with IAEA Safety Standards and makes the limit for students and apprentices more conservative than IAEA Safety Standards.

New observation made during the follow-up mission

The **Digital Radiation Passbook** application, an online platform developed by CSN, was launched on 30 September 2024. It represents the digital transformation of the paper-based radiation passbook used by external workers since the 1990s, where data related to the application of the radiological protection system is recorded.

The application integrates with the National Dose Registry, providing users with real time dose data while minimizing the need for manual data entry. All information is securely stored on a CSN-provided platform, with users identified through digital identity certificates.

The Digital Radiation Passbook is a web-based application, ensuring availability for external enterprises, facilities, and exposed workers. Currently, more than 50% of external exposed workers in nuclear and radioactive fuel cycle facilities are using the system.

From a regulatory perspective, the digital platform enables real-time statistical analysis of dose data, providing insights that were previously unavailable. This innovation enhances data-driven regulatory decision-making, improving oversight and worker safety.

FOLLOW-UP MISSION RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: *An online Digital Radiation Passbook application was released by CSN on 30 September 2024. It represents the digital transformation of the paper-based radiation passbook used by external workers since the 1990s, where data related to the application of the radiological protection system are kept.*	
(1)	**BASIS: GSR Part 3 para. 2.35 states that** *"The regulatory body shall make provision for establishing, maintaining and retrieving adequate records relating to facilities and activities. These records shall include.* - *Records of doses from occupational exposure; …"*
(2)	**BASIS: GSR Part 1 (Rev.1) Requirement 35 states that** *"The regulatory body shall make provision for establishing, maintaining and retrieving adequate records relating to the safety of facilities and activities. 4.63. The regulatory body shall make provision for establishing and maintaining the following main registers and inventories: — Registers of sealed radioactive sources and radiation generators;10 — Records of doses from occupational exposure; — Records relating to the safety of facilities and activities."*
GPF1	**Good Practice: The CSN has developed the Digital Radiation Passbook, a digital platform that provides users with real time dose data, reduces the need for manual data input, and enables the regulator to conduct real-time statistical analyses.**

5.9. AUTHORIZATION ISSUES FOR MEDICAL EXPOSURE

There were no findings in this area in the initial IRRS mission.

5.10. AUTHORIZATION ISSUES FOR PUBLIC EXPOSURE

There were no findings in this area in the initial IRRS mission.

6. REVIEW AND ASSESSMENT

6.1. GENERIC ISSUES

6.1.1. MANAGEMENT OF REVIEW AND ASSESSMENT

There were no findings in this area in the initial IRRS mission.

6.1.2. ORGANIZATION AND TECHNICAL RESOURCES FOR REVIEW AND ASSESSMENT

There were no findings in this area in the initial IRRS mission.

6.1.3. BASES FOR REVIEW AND ASSESSMENT

There were no findings in this area in the initial IRRS mission.

6.1.4. PERFORMANCE OF REVIEW AND ASSESSMENT

There were no findings in this area in the initial IRRS mission.

6.2. REVIEW AND ASSESSMENT FOR NUCLEAR POWER PLANTS

There were no findings in this area in the initial IRRS mission.

6.3. REVIEW AND ASSESSMENT FOR FUEL CYCLE FACILITIES

There were no findings in this area in the initial IRRS mission.

6.4. REVIEW AND ASSESSMENT FOR WASTE MANAGEMENT FACILITIES

There were no findings in this area in the initial IRRS mission.

6.5. REVIEW AND ASSESSMENT FOR RADIATION SOURCES FACILITIES AND ACTIVITIES

There were no findings in this area in the initial IRRS mission.

6.6. REVIEW AND ASSESSMENT FOR DECOMMISSIONING ACTIVITIES

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS	
Observation: *Although elements from a decommissioning plan are included in the license application for construction and operation of a facility, the term "decommissioning plan" is not mentioned in the current regulation. Two draft instructions refer to the initial and final decommissioning plan, however, the required contents are incomplete.*	
(1)	**BASIS: GSR Part 6 para. 7.4 states that** "*The licensee shall prepare and submit to the regulatory body an initial decommissioning plan together with the application for authorization to operate the facility. This initial decommissioning plan shall be required in order to identify decommissioning options, to demonstrate the feasibility of decommissioning, to ensure that sufficient financial resources will be available for decommissioning, and to identify categories and estimate quantities of waste that will be generated during decommissioning."*
(2)	**BASIS: GSR Part 6 para. 7.10 states that** "*The final decommissioning plan and supporting documents shall cover the following: the selected decommissioning strategy; the schedule, type and sequence of decommissioning actions; the waste management strategy applied, including clearance,*

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS	
	the proposed end state and how the licensee will demonstrate that the end state has been achieved; the storage and disposal of the waste from decommissioning; the timeframe for decommissioning; and financing for the completion of decommissioning."
S11	**Suggestion: CSN should consider updating the regulatory provisions to require licensees to submit an initial and final decommissioning plan for review and approval and describe the contents of such plans.**

Changes since the initial IRRS mission

Suggestion 11: The Royal Decree 1217/2024, dated 3 December, revises regulation on nuclear and radioactive facilities, as well as other activities related to exposure to ionizing radiation. Articles 21, 22 and 24 state that documents to be submitted to support an application for siting, construction and operation authorizations shall be accompanied by the necessary documentation, including an initial decommissioning plan. Articles 34 and 40 require the submission of final decommissioning plans when applying for decommissioning. The contents of the plans are described in the Royal Decree 1217/2024.

Status of the initial mission findings

Suggestion 11 (S11) is closed as the Royal Decree 1217/2024 requires applicants and authorized parties to submit an initial and final decommissioning plan for review and approval and describes the necessary contents of these plans.

6.7. REVIEW AND ASSESSMENT FOR TRANSPORT

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS	
Observation: *While CSN performs dose assessments for transport workers as required, dose assessments for members of the public have not been performed.*	
(1)	**BASIS: SSR-6 para. 308 states that** *"The relevant competent authority shall arrange for periodic assessments of the radiation dose to persons due to the transport of radioactive material, to ensure that the system of protection and safety complies with the Basic Safety Standards."*
(2)	**BASIS: GSR Part 4 Requirement 1 states that** *"A graded approach shall be used in determining the scope and level of detail of the safety assessment carried out in a particular State for any particular facility or activity, consistent with the magnitude of the possible radiation risks arising from the facility or activity."*
R9	**Recommendation: In accordance with a graded approach, CSN should arrange for assessments of the radiation dose to members of the public associated with the transport of radioactive material to ensure that the system of protection and safety complies with the Basic Safety Standards.**

Changes since the initial IRRS mission

Recommendation 9: In 2022, the CSN completed and documented a dose assessment in the "Report on the analysis of doses received by the public due to radioactive material transport activities in Spain."

All results of this study demonstrate that the dose to the members of public from the transport of radioactive material in Spain is lower than the limits established by regulations. In all critical scenarios considered, the annual dose to a member of the public is below 0.1 mSv/year (10% of the dose limit for the public).

Status of the initial mission findings

Recommendation 9 (R9) is closed as, in accordance with a graded approach, the CSN has arranged for assessments of the radiation dose to members of the public associated with the transport of radioactive material, ensuring that the system of protection and safety complies with the IAEA Safety Standards.

6.8. REVIEW AND ASSESSMENT FOR OCCUPATIONAL EXPOSURE

There were no findings in this area in the initial IRRS mission.

6.9. REVIEW AND ASSESSMENT FOR MEDICAL EXPOSURE

There were no findings in this area in the initial IRRS mission.

6.10. REVIEW AND ASSESSMENT FOR PUBLIC EXPOSURE

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS	
Observation: *Although Spain has completed a number of actions as part of its efforts to assess indoor Radon exposure to members of the public, such as the development of a national Radon risk map with definitions of radon prone areas, the action plan itself has not been completed or approved.*	
(1)	**BASIS: GSR Part 3 para. 5.20 states that** *"Where activity concentrations of radon that are of concern for public health are identified on the basis of the information gathered as required in para. 5.19(a), the government shall ensure that an action plan is established comprising coordinated actions to reduce activity concentrations of radon in existing buildings and in future buildings, which includes …"*
(2)	**BASIS: GSR Part 3 para. 5.21 states that** *"The government shall assign responsibility for:* *a) Establishing and implementing the action plan for controlling public exposure due to Rn-222 indoors; …* *Determining the circumstances under which actions are to be mandatory or are to be voluntary, with account taken of legal requirements and of the prevailing social and economic circumstances."*
R10	**Recommendation: The government should ensure that a national radon action plan be completed and approved, comprising coordinated actions to reduce activity concentrations of radon in existing and future buildings, and assign responsibilities for establishing and implementing this action plan.**

Changes since the initial IRRS mission

Recommendation 10: The National Radon Action Plan was finalized and subsequently approved by the Council of Ministers in January 2024 with actions until 2029. Development and Implementation of the plan is supported by Article 77 of Royal Decree 1029/2022, which mandates that the Government shall establish the policy to reduce the risk to the health of the population due to exposure to indoor radon, addressing homes, workplaces, and public buildings where the reference level can be exceeded.

The Action Plan was prepared by the National Plan Committee against Radon, whose composition is set out in Article 78 of Royal Decree 1029/2022. The preparation of this National Plan against Radon complies with the Royal Decree, Title VII "existing exposure situations, Chapter III "Exposure to radon.", Section 2

The Plan includes a comprehensive set of strategies and activities designed to reduce radon risk in both existing and future buildings, and conduct awareness campaigns for homeowners, builders, and autonomous and local authorities. An awareness campaign was conducted in April 2024.

The Plan describes the foreseen activities by the Ministry of Health, Ministry of Ecological Transition and Demographic Challenge, Regional and Local authorities and the CSN.

The action plan demonstrates Spain's commitment to address radon risks in accordance with international safety standards and European Directive 2013/59/EURATOM (Basic Safety Standards Directive).

Status of the initial mission findings

Recommendation 10 (R10) is closed as the National Plan Committee against Radon has developed the Action Plan for Radon, approved by the Council of Ministers in January 2024, with action until 2029**.**

7. INSPECTION

7.1. GENERIC ISSUES

There were no findings in this area in the initial IRRS mission.

7.2. INSPECTION OF NUCLEAR POWER PLANTS

There were no findings in this area in the initial IRRS mission.

7.3. INSPECTION OF FUEL CYCLE FACILITIES

There were no findings in this area in the initial IRRS mission.

7.4. INSPECTION OF WASTE MANAGEMENT FACILITIES

There were no findings in this area in the initial IRRS mission.

7.5. INSPECTION OF RADIATION SOURCES FACILITIES AND ACTIVITIES

There were no findings in this area in the initial IRRS mission.

7.6. INSPECTION OF DECOMMISSIONING ACTIVITIES

There were no findings in this area in the initial IRRS mission.

7.7. INSPECTION OF TRANSPORT

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS	
Observation: *CSN's program of inspections for manufactured packagings is focused primarily on production processes. However, it does not consider sufficiently final compliance inspections for each packaging manufactured and used for transport and/or storage of spent fuel.*	
(1)	**BASIS: TS-G-1.5 para. 4.87 states that** "*Manufacturing facilities and subcontractors may be subject to inspections by the competent authority. The frequency and extent of such inspections should be determined by the level of confidence that the competent authority has in the manufacturing arrangements and by the importance to safety of the package features concerned."*
S12	**Suggestion: CSN should consider enhancing the inspection program to include verification of the adequacy of the documentary evidence that each packaging used for spent fuel storage and/or transport is manufactured in compliance with the approved design specifications.**

Changes since the initial IRRS mission

Suggestion 12: The CSN Procedure PT.IV.84 "Inspection of the manufacturing of spent fuel casks" has been modified in 2021 to enhance the existing inspection program, to include the review of manufacturing dossiers, in accordance with the requirements of CSN Instruction IS-39 on control and monitoring in the manufacturing of packages for the transport of radioactive material.

The CSN's supervision and control activities in the packaging manufacturing process have increased as a result of this development.

The IAEA safety standards TS-G-1.5 has been superseded by SSG-78; however, the IRRS team concluded this change has not have any impact on the conclusion related to Suggestion 12.

Status of the initial mission findings

Suggestion 12 (S12) is closed as all aspects are addressed in the updated internal procedure, and the inspection programme has evolved significantly.

7.8. INSPECTION OF OCCUPATIONAL EXPOSURE

There were no findings in this area in the initial IRRS mission.

7.9. INSPECTION OF MEDICAL EXPOSURE

There were no findings in this area in the initial IRRS mission.

7.10. INSPECTION OF PUBLIC EXPOSURE

There were no findings in this area in the initial IRRS mission.

8. ENFORCEMENT

8.1. ENFORCEMENT POLICY AND PROCESS

There were no findings in this area in the initial IRRS mission.

8.2. ENFORCEMENT IMPLEMENTATIONS

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS	
Observation: *MITECO and the autonomous communities implement enforcement measures, in relation to infringements based on CSN's recommendations. However, certain autonomous communities have not consistently informed CSN of the outcome of their enforcement measures.*	
(1)	**BASIS: GSR Part 1 para. 2.18 states that** "*Where several authorities have responsibilities for safety within the regulatory framework for safety, the government shall make provision for effective coordination of their regulatory functions, to avoid omissions or undue duplication and do avoid conflicting requirements being placed on authorized parties."*
S13	**Suggestion: The government should consider measures to ensure that the autonomous communities notify CSN of their enforcement actions.**

Changes since the initial IRRS mission

Suggestion 13: Since the initial 2018 IRRS mission, the CSN has updated its procedure PG.IV.05 "Enforcement actions of the CSN on nuclear safety or radiation protection matters." This procedure includes a reminder to the autonomous communities of their obligation to inform, when needed, the CSN about the subsequent actions of enforcement proposals.

The CSN has also established a follow-up system for proposed enforcement actions that allows CSN to identify cases in which they have not been informed of the actions taken by the competent authorities. The IRRS follow-up team noted that, for cases in which the CSN requested the autonomous communities to provide detailed information on the processing of the enforcement proposals, the autonomous communities have always delivered the information requested.

Lastly, in January 2025, the CSN wrote to all the autonomous communities to request that they appoint a contact person, at managing director level, to attend a meeting aimed at strengthening cooperation between the CSN and the autonomous communities. This meeting is planned to take place in the coming months.

Status of the initial mission findings

Suggestion 13 (S13) is closed as the CSN has implemented measures to ensure that the autonomous communities will comply with their obligations to inform the CSN of their enforcement actions, including initiatives to reinforce its cooperation with those communities.

9. REGULATIONS AND GUIDES

9.1. GENERIC ISSUES

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS	
Observation: *While there is a formal CSN process in place for the review of regulations and guides it currently doesn't ensure that a systematic and periodic review is conducted. The cross-reference of the IAEA safety requirements and guides with the current CSN legislation (Laws, decrees, instructions and guidelines) shows that the IAEA requirements are not completely implemented.*	
(1)	**BASIS: GSG 13 para 3.65 states that** "*The regulatory body should ensure that the regulations and guides are kept up to date and should establish procedures, within its integrated management system, for their periodic review."*
S14	**Suggestion: The regulatory authorities should consider enhancing its existing process for establishing and amending regulations and guides to include periodic and systematic reviews to ensure that the regulatory framework is maintained up to date with current international safety standards.**
Observation: *For some regulatory provisions the IAEA Safety Standards are not fully considered, and this was evidenced in particular in the areas of, Occupational Exposure (condition of service), Medical Exposure, Radioactive Waste, Fuel Cycle Facilities and Decommissioning.*	
(1)	**BASIS: GSR Part 1 Requirement 33 states that** "*Regulations and guides shall be reviewed and revised as necessary to keep them up to date, with due consideration of relevant international safety standards and technical standards and of relevant experience gained."*
(2)	**BASIS: GSR Part 3 para. 3.148 states that** "*The government shall ensure, as part of the responsibilities specified in para. 2.15, that as a result of consultation between the health authority, relevant professional bodies and the regulatory body, a set of diagnostic reference levels is established for medical exposures incurred in medical imaging …"*
(3)	**BASIS: GSR Part 3 para. 3.181 (d) states that** "*Registrants and licensees shall, with regard to any unintended or accidental medical exposures investigated produce and keep, as soon as possible after the investigation or as otherwise required by the regulatory body, a written record that states the cause of the unintended or accidental medical exposure …"*
(4)	**BASIS: GSR Part 3 para. 3.149 (a – i and ii) states that** "*The government shall ensure that, as a result of consultation between the health authority, relevant professional bodies and the regulatory body, the following are established:* *(a) Dose constraints, to enable the requirements of paras 3.173 and 3.174, respectively, to be fulfilled for: Exposures of careers and comforters"*
R11	**Recommendation: The regulatory authorities (Government Ministries and CSN) should comprehensively review the regulatory provisions to ensure consistency with IAEA Safety Standards and specifically in the areas of Occupational Exposure (conditions of service), Medical Exposure, Radioactive Waste, Fuel Cycle Facilities and Decommissioning.**

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS	
Observation: *While there is a requirement for the independent verification of safety assessments for Nuclear Facilities, the government does not require applicants to consider performing an independent verification of safety assessment for radioactive facilities prior to submission for regulatory review and assessment.*	
(1)	**BASIS: GSR Part 1 para. 4.33 states that** "*Prior to the granting of an authorization, the applicant shall be required to submit a safety assessment, which shall be reviewed and assessed by the regulatory body in accordance with clearly specified procedures. The extent of the regulatory control applied shall be commensurate with the radiation risks associated with facilities and activities, in accordance with a graded approach."*
(2)	**BASIS: GSR Part 4 Requirement 21 states that** "*The operating organization shall carry out an independent verification of the safety assessment before it is used by the operating organization or submitted to the regulatory body."*
S15	**Suggestion: The government should consider developing a requirement for the applicant to perform an independent verification of safety assessments for radioactive facilities, in accordance with a graded approach, before submission for regulatory review and assessment.**

Changes since the initial IRRS mission

Suggestion 14: The general process for the drafting of regulation is outlined in CSN procedure PG.III.03, approved in 2022. Annexes I and II describe the regulatory framework for establishing the regulation on nuclear safety and radiological protection, including international regulations. Additionally, there are two administrative procedures related to this subject:

- PA.III.01 "Regulation drafting," approved in 2020, establishes the procedure to draft, issue and amend regulations and guidelines; And
- PA.III.02 "Annual Plan for Regulation", approved in 2022, includes the regulatory initiatives that the CSN intends to approve each year. The annual plan for regulation is published on the website of the CSN. As part of this procedure, an annual evaluation report is established.

The CSN has presented how the annual plan is established through the proposals of the different units of the CSN and how decisions are made.

Recommendation 11: In 2022, Royal Decree 1029/2022 was issued approving the Regulation on health protection against the risks arising from exposure to ionising radiation. In 2024, Royal Decree 1217/2024 was issued approving the Regulation on nuclear and radioactive facilities, and other activities related to exposure to ionizing radiation. Detailed guidance regarding implementation of some of the decrees' requirements were incorporated through updates of existing CSN instructions. Some new instructions still need to be written or approved.

Considering Radioactive Waste, Fuel Cycle Facilities and Decommissioning, the Royal Decree 1217/2024 includes new requirements for the waste management, such as the authorisation for decommissioning and closure of disposal facilities, in distinction to the authorisation for decommissioning and release of the site for other nuclear facilities; the requirement, by regulation, of a waste acceptance criteria document; the request for the authorisation of decommissioning, among other documents, a Decommissioning Plan.

Specifically, the IRRS team noted that:

- The CSN Instruction IS-45 regarding "safety requirements during the design, construction and operation phases of nuclear and radioactive facilities of the nuclear fuel cycle, to provide for their decommissioning and, where appropriate their decommissioning and closure, was updated on January 19th, 2022; Its article 5 requires the licensee, as of the design stage of the facility, to draw up a Preliminary Decommissioning Plan together with the organization responsible for its future decommissioning. This Plan shall be submitted to the CSN as support for the requests for the siting, construction and the operating authorizations of the facilities;
- A CSN Instruction on safe decommissioning and, where appropriate, safe closure of nuclear and radioactive fuel cycle facilities (Project IS-NOR/13-002) has been drafted. This draft Instruction sets out and complements the nuclear safety and radiation protection requirements established by the Royal Decree 1217/2024, to ensure that decommissioning of nuclear and radioactive fuel cycle facilities is carried out in safe conditions. It has been submitted for prior public consultation;
- A CSN Instruction on safety criteria for predisposal of radioactive waste (IS-NOR/18-001) has been drafted. It determines an additional document for the operation of disposal facility: the waste acceptance criteria. It has been submitted for prior public consultation;

Considering the GSR Part 3 Requirement 34, para. 3.148, regarding the diagnostic reference levels (DRL) that shall establish limits on medical exposures arising from medical imaging and diagnostics:

- the Royal Decree 601/2019 was issued to establish the justification and optimisation of the use of ionising radiation for the radiological protection of people on the occasion of medical exposures provides for the establishment of reference levels for diagnostic procedures using radiation and for interventional radiology. The decree specifies that these DRL shall be regularly reviewed, taking into account European or national DRL, where they exist, and, where they do not exist, are developed based on sufficiently accredited scientific knowledge. These DRL are established in a report, resulting from the "DOPOES II PROJECT" and endorsed by both the CSN and the Ministry for Health. This report was distributed to the health competent authorities of all autonomous communities in 2022.
- the Royal Decree 673/2023 was issued to establish quality and safety criteria for nuclear medical care units consistent with the principle of DRL defined by the relevant national scientific societies. The decree specifies that these reference levels shall also be included in the quality and safety assurance programme.

Considering the GSR Part 3 Requirement 41, para. 3.181 (d) regarding to the analysis and report of unintended or accidental medical exposure:

- The Royal Decree 601/2019 was issued to establish the justification and optimization of the use of ionizing radiation for the radiological protection of people during medical exposures and sets provisions for accidental and unintentional exposures. Article 14 requires that authorized parties must record and analyse any event that may lead to an accidental or unintentional medical exposure.

Considering the GSR Part 3 Requirement 34, para. 3.149 (a - i and ii) regarding dose constraints, to enable the requirements of paragraph 3.173 and 3.174 to be fulfilled for exposures of carers and comforters:

- The Royal Decree 601/2019, of October 18, on the justification and optimization of the use of ionizing radiation for the radiological protection of people during medical exposures addresses radiological protection of carers and comforters in its article 7. It sets that dose restrictions shall be established and define in the Q/A programme for the exposure of carers of patients who are undergoing or have undergone diagnosis or medical treatment, as appropriate. Those dose

constraints have not been fully defined yet in appropriate guide or reference documents set by the competent authorities. However, in its assessments of authorizations, the CSN checks that the analysis of the exposure of carers and comforters comply with the international recommendation of the ICRP 103.

Suggestion 15: The Royal Decree 1217/2024, approving the regulation on nuclear and radioactive facilities, and other activities related to exposure to ionizing radiation includes provisions requiring the applicant of an authorization the submission of a safety assessment both for the nuclear and radioactive facilities. It includes information on the required documents as regards the application and arrangements for granting of all needed authorization in the case of nuclear fuel cycle radioactive facilities and the applications of the rest of radioactive facilities. Safety assessment, which is required by legal framework must demonstrate that the proposed application complies with the licensing basis and there is not an unacceptable risk involved. Regarding to radiation protection, the Royal Decree 1029/2022, approving the Regulation on health protection against the risks arising from exposure to ionising radiation establishes requirements:

- For the establishment of a Radiation Protection Service (SPR) at each facility that poses a significant radiological risk; or
- For contracting an external Technical Radiation Protection Unit (UTPR) for specific advice on radiation protection and the performance of the functions in this area.

In accordance with Article 26 of the Royal Decree 1029/2022 and the CSN Instruction 08, the Radiation Protection Services shall be established and act independently from the rest of the authorized parties' functional units. Moreover, the royal decree requires that SPR and UTPR have to be authorized by the CSN. Among other assignments, SPR and UTPR are responsible to conduct an assessment to support the authorization process.

So, the Royal Decree 1029/2022 establishes the legal basis for the independent verification of the safety assessments of radioactive facilities, which are specified in the existing requirements in the CSN Safety Guide 7.3 "Bases for the establishment of Radiological Protection Technical Services and Units" that the SPR or UTPR should be aware, participate in or supervise the design, assembly, installation, operation, modification and decommissioning phases of the facilities, from the beginning of the acquisition process until receipt, of all types of radioactive or nuclear material as well as equipment.

Status of the initial mission findings

Suggestion 14 (S14) is closed as the CSN has enhanced its existing process for establishing and amending regulations and guides to include periodic and systematic reviews to ensure that the regulatory framework is maintained up to date with current international safety standards.

Recommendation 11 (R11) is closed on the basis of progress made and confidence in effective completion in due time as the Royal Decrees 601/2019, 1029/2022, 673/2023 and 1217/2024 have set provisions in consistence with IAEA Safety Standards. The documentation that still needs to be updated has already been identified by the competent authorities.

Suggestion 15 (S15) is closed as the Royal Decrees 1029/2022 and 1217/2024 have set requirements for the applicant to perform an independent verification of safety assessments for radioactive facilities.

9.2. REGULATIONS AND GUIDES FOR NUCLEAR POWER PLANTS

There were no findings in this area in the initial IRRS mission.

9.3. REGULATIONS AND GUIDES FOR FUEL CYCLE FACILITIES

There were no findings in this area in the initial IRRS mission.

9.4. REGULATIONS AND GUIDES FOR WASTE MANAGEMENT FACILITIES

There were no findings in this area in the initial IRRS mission.

9.5. REGULATIONS AND GUIDES FOR RADIATION SOURCES FACILITIES AND ACTIVITIES

There were no findings in this area in the initial IRRS mission.

9.6. REGULATIONS AND GUIDES FOR DECOMMISSIONING ACTIVITIES

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS	
Observation: *While some regulatory provisions have been made, CSN has not established a specific procedure governing the clearance of sources, materials and objects from regulatory control, and which encompasses all types of facilities and activities. In addition, clearance of disused sealed sources after decay is not considered.*	
(1)	**BASIS: GSR Part 3 para. 3.12 states that** "*The regulatory body shall approve which sources, including materials and objects, within notified or authorized practices may be cleared from regulatory control, using as the basis for such approval the criteria for clearance specified in Schedule I or any clearance levels specified by the regulatory body on the basis of these criteria. By means of this approval, the regulatory body shall ensure that sources that have been cleared from regulatory control do not again become subject to the requirements for notification, registration or licensing unless it so specifies."*
S16	**Suggestion: CSN should consider establishing regulatory provisions on clearance, applicable to all types of facilities or activities and communicated to authorized parties and stakeholders.**

Changes since the initial IRRS mission

Suggestion 16: The CSN drafted new regulatory provisions, leading to the official approval and publication of Royal Decree 1217/2024 on December 3, 2024. This decree establishes the Regulation on nuclear and radioactive facilities, along with other activities involving exposure to ionizing radiation, including clearance.

Status of the initial mission findings

Suggestion 16 (S16) is closed as Article 115 and the relevant Annexes of Royal Decree 1217/2024 establish comprehensive regulatory provisions on clearance, addressing all suggested aspects.

9.7. REGULATIONS AND GUIDES FOR TRANSPORT

There were no findings in this area in the initial IRRS mission.

9.8. REGULATIONS AND GUIDES FOR OCCUPATIONAL EXPOSURE

There were no findings in this area in the initial IRRS mission.

9.9. REGULATIONS AND GUIDES FOR MEDICAL EXPOSURE

There were no findings in this area in the initial IRRS mission.

9.10. REGULATIONS AND GUIDES FOR PUBLIC EXPOSURE

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS	
Observation: *Spain has not established Reference Levels in its current regulations for public dose exposure due to radionuclides in construction materials.*	
(1)	**BASIS: GSR Part 3 para. 5.22 states that** *"The regulatory body or other relevant authority shall establish specific reference levels for exposure due to radionuclides in commodities such as construction materials, food and feed, and in drinking water, each of which shall typically be expressed as, or be based on, an annual effective dose to the representative person that generally does not exceed a value of about 1 mSv."*
R12	**Recommendation: The government should establish Reference Levels for public dose exposure due to radionuclides in construction materials.**

Changes since the initial IRRS mission

Recommendation 12: Spain has implemented specific reference levels in its current regulations to establish requirements for public dose from exposure to natural radionuclides in construction materials. These reference levels are established under Royal Decree 1029/2022, which aligns with European Directive 2013/59/EURATOM.

Article 72 of the decree sets a reference level of 1 millisievert (mSv) per year for indoor exposure to gamma radiation from natural radioactivity in construction materials. This reference level applies in addition to outdoor external exposure, ensuring a comprehensive assessment of total exposure levels. The regulation requires the determination of radioactive content (Ra-226; Th-232; K-40) of some building materials.

To ensure compliance, the decree specifies that suppliers of construction materials must assess and document the potential radiation levels of their products before they are made available to the public. Article 80 outlines these obligations and emphasizes the importance of controlling materials that may exceed the reference level. A list of materials (Annex VI) requiring specific monitoring is also included, reflecting a proactive approach to radiation safety.

By establishing these reference levels and associated measures, Spain aims to protect public health in existing exposure situations due to natural radioactivity in construction materials.

Status of the initial mission findings

Recommendation 12 (R12) is closed as Decree 1029/2022, Article 72 establishes a reference level of 1 millisievert (mSv) per year for indoor exposure to gamma radiation from natural radioactivity in construction materials.

10. EMERGENCY PREPAREDNESS AND RESPONSE – REGULATORY ASPECTS

10.1. AUTHORITY AND RESPONSIBILITIES FOR REGULATING ON-SITE EPR OF OPERATING ORGANIZATIONS

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS	
Observation: *Although CSN has issued some requirements on EPR and considers an authorized party's approved emergency plan as legally binding requirements, CSN has identified that the reinforcement of EPR requirements for nuclear operating organizations via an instruction is convenient to improve the Spanish regulatory framework for EPR. Currently, CSN has developed a Draft 5 Instruction in support of this effort. Additionally, CSN did not identify in its Action Plan the need to develop associated guidance documents.*	
(1)	**BASIS: GSR Part 7 para. 4.12 states that** "*The regulatory body is required to establish or adopt regulations and guides to specify the principles, requirements and associated criteria for safety upon which its regulatory judgements, decisions and actions are based [7]. These regulations and guides shall include principles, requirements and associated criteria for emergency preparedness and response for the operating organization. (see also paras 1.12 and 4.5).*"
S17	**Suggestion: CSN should consider finalizing a consolidated and comprehensive set of EPR regulatory provisions for authorized parties upon which CSN can base its regulatory judgements, decisions, and actions. Further, CSN should develop associated guidance documents describing acceptable methods to meet the requirements for use by the authorized parties.**
Observation: *During decommissioning, the Ministry of Interior initiates the process to change the emergency preparedness offsite response. Subsequently the Ministry requests CSN to provide an analysis indicating whether the offsite radiological response capabilities are needed to provide for the protection of public health and safety., CSN assesses the licensee's hazard analysis previously required for decommissioning authorization, in order to answer the request according to the graded approach and the reduction of the risk to public health and safety, but the CSN does not inform the results of the assessment until the request of the Ministry of Interior.*	
(1)	**BASIS: GSR Part 7 para. 4.18 states that** "*Hazards shall be identified and potential consequences of an emergency shall be assessed to provide a basis for establishing arrangements for preparedness and response for a nuclear or radiological emergency. These arrangements shall be commensurate with the hazards identified and the potential consequences of an emergency.*"
(2)	**BASIS: GSR Part 7 para. 4.26 states that** "*The government through the regulatory body shall ensure that operating organizations review appropriately and, as necessary, revise the emergency arrangements (a) prior to any changes in the facility or activity that affect the existing hazard assessment and (b) when new information becomes available that provides insights into the adequacy of the existing arrangements. Footnote 11: Examples of such changes and available information include the movement of irradiated nuclear fuel to a new location, projected flooding, and information on storms or other meteorological hazards.*"
(3)	**BASIS: GSR Part 7 para. 5.38 states that** "*For facilities in Category I or II, arrangements shall be made for effectively making decisions on and taking urgent protective actions, early protective actions and other response actions off the site in order to achieve the goals of emergency response, on the basis of a graded approach and in accordance with the protection strategy.*"
S18	**Suggestion: CSN should consider informing the Ministry of Interior, prior to its request for an assessment by CSN, of changes to public risk identified during the decommissioning phase, commensurate with the hazards identified and the potential offsite consequences of an emergency.**

Changes since the initial IRRS mission

Suggestion 17: In February 2020, the CSN issued a new Instruction IS-44, "Emergency Planning, Preparedness and Response Requirements at Nuclear Facilities," which establishes the regulatory requirements for emergency preparedness and response (EPR) for all life-cycle phases of nuclear facilities in Spain. The Instruction was published in the Official Gazette No. 63 of 12-March 2020.

IS-44 includes a comprehensive set of regulatory requirements in line with European and international recommendations and addresses the main topics for EPR, including: the emergency classification system; reference levels for emergency workers; emergency response organization (ERO); on-site and off-site emergency management centres and areas, including requirements on the establishment of Alternative Emergency Management Centre in operational nuclear plants; training and exercise programs; requirements for mitigatory actions and for the on-site emergency plan of the nuclear facility; modifications to the on-site emergency plan; emergency response functions; records and documentation; and the quality assurance program.

The IRRS team was informed that, after the approval of IS-44, the CSN revised and updated accordingly two safety guides, with input from operators of nuclear facilities:

1) The CSN Safety Guide 1.3 (Rev. 2) of 02-Sep 2022 on "Planning and response to nuclear facility emergencies," which addresses guidance on: accidents and emergency classes; events initiating the on-site emergency plan; response actions; emergency response organization; facilities, means and equipment for emergency response.
2) The CSN Safety Guide 1.9 (Rev. 2) of 02-Sep 2022 on "Emergency preparedness at nuclear facilities and documentation of their management system," which addresses guidance on: qualification and training of personnel; training through exercises; on-site emergency plan drills; maintenance of facilities, equipment, and emergency resources; documentation and records; and quality assurance programme.

On the status of regulatory requirements on emergency preparedness and response for radiological facilities, the IAEA team was informed that one regulatory requirement is included in the Royal Decree 1217/2024 (the update of RD 1836/1999), Article 49, letter e), which requires every applicant for authorization to develop and submit an on-site emergency plan as part of the authorization process. In addition to this requirement, the CSN issued in the recent years (2020 and later) revised versions of "Circular Informativa" for all radiation facilities and activities with detailed information on what the on-site emergency plan should include for that respective radiological facility or activity, based on a graded approach. Therefore, it appears that on-site emergency preparedness and response arrangements for radiological facilities are covered by the RD 1217/2024 and detailed "Circular Informativa" issued for radiation facilities and activities in Spain.

Suggestion 18: In 2020, the CSN completed a review and update of the internal procedure PT.VI.34 "Evaluation of Nuclear Facilities Emergency Plans." According to paragraph 5.3 of this revised procedure, once the owner of a nuclear facility submits a proposal for modification of the on-site emergency plan associated with a decommissioning authorization, the CSN will determine if the conditions are met for the off-site emergency plan to be revised under the scope of Royal Decree 1564/2010 on "Basic Guidelines for civil protection planning in case of radiological risk" (DBRR), instead of continuing to be included under the scope of Royal Decree 1546/2004 on "The Nuclear Emergency Plan" (PLABEN). The conditions that must be met are:

1) according to the Accident Analysis, no events are postulated that may have radiological consequences outside the boundary of the nuclear facility that would justify taking urgent protective actions off the site, and
2) there is no spent fuel stored in the fuel pool.

If both conditions are met, the new procedure specifies that the CSN will inform the General Directorate of Civil Protection and Emergencies (DGPCE) of the Ministry of Interior that, due to reduction of radiological risk, the off-site emergency planning in relation to the nuclear facility should move from PLABEN to DBRR. Also, the CSN will inform the autonomous community in which the nuclear facility is located of this change in status and therefore the need to include the nuclear facility within the scope of a "Special Plan against radiological risk."

Afterwards, the CSN will require the operator of the nuclear facility under decommissioning to verify that its on-site emergency plan incorporates the changes required in terms of notifications and communications to the competent authority, in accordance with the requirements of the "Special Plan against radiological risk" of the autonomous community.

Status of the initial mission findings

Suggestion 17 (S17) is closed as the CSN issued a new Instruction (IS-44) consisting of a comprehensive set of regulatory requirements for EPR at nuclear facilities, in line with the IAEA safety standards, and revised accordingly the associated guidance documents.

Suggestion 18 (S18) is closed as the revised Internal Procedure PT.VI.34 addresses now clearly the requirement for the CSN to promptly inform the Ministry of Interior about changes to public radiological risk during the decommissioning phase of a nuclear facility.

10.2. REGULATIONS AND GUIDES ON ON-SITE EPR OF OPERATING ORGANIZATIONS

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS	
Observation: *Onsite and Offsite response organization plans, Royal Decrees and CSN complementary instructions have varying and inconsistent provisions, as well as the level of detail, definitions for emergency workers and actions to be taken when reaching prescribed dose limits.*	
(1)	**BASIS: GSR Part 3 para.4.12 states that** "*The government shall establish a programme for managing, controlling and recording the doses received in an emergency by emergency workers, which shall be implemented by response organizations and employers."*
(2)	**BASIS: GSG-2 para. 4.1 states that** "*An emergency worker is a person having specified duties as a worker in response to an emergency, who might be exposed while taking actions in response to the emergency. Emergency workers may include those employed by registrants and licensees as well as personnel from response organizations, such as police officers, firefighters, medical personnel, and drivers and crews of evacuation vehicles."*
(3)	**BASIS: GSR Part 7 para. 5.51 states that** "*The operating organization and response organizations shall determine the anticipated hazardous conditions, both on the site and off the site, in which emergency workers might have to perform response functions in a nuclear or radiological emergency in accordance with the hazard assessment and the protection strategy."*
S19	**Suggestion: The Government and CSN should consider revising the regulatory provisions for on-site and off-site response activities to provide: a consistent definition for emergency workers, dose limits based upon emergency response activities, and actions to be taken if prescribed dose limits are exceeded.**
Observation: *During EPR, CSN does not require authorized parties to communicate with the public and media. Additionally, any information the government provides to the public and media during EPR is not coordinated with the authorized parties.*	

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS	
(1)	**BASIS: GSR Part 7 para. 4.12 states that** "*The regulatory body is required to establish or adopt regulations and guides to specify the principles, requirements and associated criteria for safety upon which its regulatory judgements, decisions and actions are based [7]. These regulations and guides shall include principles, requirements and associated criteria for emergency preparedness and response for the operating organization. (see also paras 1.12 and 4.5).*"
(2)	**BASIS: GS-G-2.1 para. 6.4 states that** "*The second general operational concept is that arrangements should be made to promptly provide useful and coordinated information to the public via the news media. This should include arrangements to ensure that the public statements of the operator, local officials and national officials all provide a consistent message to the public. While this could be accomplished by other means, in this concept of operations it is accomplished by establishing, as soon as possible, a single location as the public information centre (see Appendix VIII). In addition, in all cases the public should be provided with a plain language explanation of the risks to them, the actions they can take to reduce the risks and the actions being taken to ensure that people are safe and their interests are being protected. It should be recognized that this applies to any event perceived as an emergency by the public or the media.*"
(3)	**BASIS: GSR 7 para. 4.10 states that** "*The government shall establish a national coordinating mechanism to be functional at the preparedness stage, consistent with its emergency management system, with the following functions: (i) To coordinate effective communication with the public in preparedness for a nuclear or radiological emergency.*"
(4)	**BASIS: GSR 7 para. 5.70 states that** "*Arrangements shall be made to ensure that information provided to the public by response organizations, operating organizations, the regulatory body, international organizations and others in a nuclear or radiological emergency is coordinated and consistent, with due recognition of the evolutionary nature of an emergency.*"
R13	**Recommendation: The Government should enhance provisions to ensure coordination among operating organizations, as well as response organizations and the regulatory authorities, to ensure that the government provides prompt and useful information to the public and media during a nuclear and radiological emergency. The coordination of the communication should be exercised and evaluated.**
Observation: *Changes in the Emergency plan identified in the complementary instruction CSN/C/SG/ALO.17/01 that are considered to be major changes are required to be submitted to CSN prior to implementation. However, CSN does not require operating organizations to conduct an analysis to justify its conclusion that a change is minor.*	
(1)	**BASIS: GSR Part 7 para. 4.12 states that** "*The regulatory body is required to establish or adopt regulations and guides to specify the principles, requirements and associated criteria for safety upon which its regulatory judgements, decisions and actions are based [7]. These regulations and guides shall include principles, requirements and associated criteria for emergency preparedness and response for the operating organization. (see also paras 1.12 and 4.5).*"
(2)	**BASIS: GSR Part 7 para. 4.26 states that** "*The government through the regulatory body shall ensure that operating organizations review appropriately and, as necessary, revise the emergency arrangements (a) prior to any changes in the facility or activity that affect the existing hazard assessment and (b) when new information becomes available that provides insights into the adequacy of the existing arrangements. Footnote 11: Examples of such changes and available information include the movement of irradiated nuclear fuel to a new location, projected flooding, and information on storms or other meteorological hazards.*"

2018 MISSION RECOMMENDATIONS AND SUGGESTIONS	
S20	**Suggestion: CSN should consider enhancing provisions to require operating organizations to perform an analysis to justify when a change is minor.**

Changes since the initial IRRS mission

Suggestion 19: The Royal Decree 1029/2022 on "Regulation on health protection against risks arising from exposure to ionizing radiation" updates the previous Royal Decree 783/2001 on the same topic. The new Royal Decree is mandatory for all parties – both onsite and offsite response organizations – involved in the response to a nuclear or radiological emergency. The decree includes a clear definition of emergency workers, reference levels for the protection of emergency workers (in Article 69) consistent with the IAEA guidance values for emergency workers, and a special requirement for special health surveillance in case of radiation exposure above reference levels (in Article 50). In relation to special health surveillance in case reference levels are exceeded, the IAEA team was informed that each response organization has a Prevention Service that is responsible to assess the radiation doses of emergency workers and to take necessary actions for their health surveillance in case of overexposure.

In March 2023, the Cabinet of Ministers promulgated the Agreement "Strategy for the Protection of the Population and Emergency Intervention Personnel in the Event of a Nuclear or Radiological Emergency," which addresses, amongst other topics, the exposure of emergency workers and replicates the definition and reference levels that were adopted with the Royal Decree 1029/2022.

Recommendation 13: In June 2020, the Royal Decree 586/2020 regarding "Mandatory information in the event of a nuclear or radiological emergency" was promulgated which adopted the provisions of IAEA safety standards and the Directive 2013/59/EURATOM concerning information provided to the public in the event of a nuclear or radiological emergency.

Of note, Royal Decree 586/2020 includes a specific requirement on coordination of public communication during a nuclear and radiological emergency amongst off-site response organizations, operating organizations, and regulatory authorities. According to Article 7, "… the directors of the external response level plans will be obliged ... to promptly alert and inform the population actually affected of the details of the emergency situation, the conduct to be adopted and, where appropriate, the health protection measures applicable to them." It further states that "… the directors of the external response will act in this information task with the necessary cooperation and advice of the Nuclear Safety Council and the competent health authority, the owner of the nuclear or radioactive facility that is suffering the accident, and any other organization whose participation is relevant to the information provided."

Further, Article 7 of the decree requires the off-site response organizations to test periodically and evaluate the planned actions for public information coordination. Given this requirement, several exercises were conducted in recent years to practice public communication during a nuclear or radiological emergency (amongst other objectives). Drills between the operator of each operational NPP and the CSN are held annually, and in addition, the General Directorate of Civil Protection and Emergencies (DGPCE) is conducting a series of emergency response exercises to test public information via messages sent with the ES-ALERT application, of which two have been already done: NURIEX 2023 at the National School of Civil Protection in Madrid; and NURIEX-GU 2024 in Brihuega (Guadalajara).

Suggestion 20: In February 2020, the CSN promulgated a new Instruction IS-44, "Planning, Preparation, and Emergency Response Requirements for Nuclear Facilities," which establishes enhanced requirements for the operators of nuclear facilities in relation to modifications to the on-site emergency response plan, and provides detailed criteria on what can be considered *changes* of significant relevance or *minor changes*, and how to process them. In addition, in November 2020 the CSN updated its technical procedure PT.VI.34,

"The evaluation of nuclear facilities emergency plans," and introduced clear requirements for the CSN staff to verify that all minor changes of the on-site emergency plan made by operators are consistent with minor change criteria.

Paragraph 3.6.1 of IS-44 addresses modifications to the on-site emergency response plan (PEI). Changes that are significant and therefore require prior the authority approval are described in this paragraph. All other PEI modifications are considered as *minor changes*.

PT.VI.34 Chapter 5.4, "Modification of the PEI via minor changes," states that: "The owners of those facilities whose operating permit allows it, may make minor modifications to their PEI without needing to obtain approval from the competent ministry. […] When the owner modifies the PEI by applying the criterion of minor modifications, he will send it to the CSN as soon as possible and in any case within ten days from the entry into force, accompanied by a document that clearly identifies the changes made." The CSN staff will determine whether this modification implies a reduction of the requirements included in the current revision of the PEI. If the scope of the modification presented exceeds what is understood as a minor modification according to IS-44, the CSN will communicate this circumstance to the licensee, indicating that the change must be processed through the competent Ministry as required for changes which are not minor.

The CSN maintains a database that includes all notifications made by operators of nuclear facilities regarding minor modifications to the PEI. In case of changes made in line with the criteria in para 3.6.1 of IS-44, the tracking of modifications is reflected in the process of approval of the plan.

Status of the initial mission findings

Suggestion 19 (S19) is closed as both Royal Decree 1029/2022 (update of 783/2001) and the Cabinet of Ministers Agreement "Strategy for the Protection of the Population and Emergency Intervention Personnel in the Event of a Nuclear or Radiological Emergency" (2023) provide for a consistent definition for emergency workers, reference levels based upon emergency response actions, and actions to be taken when prescribed reference levels are exceeded.

Recommendation 13 (R13) is closed as the new Royal Decree 586/2020 includes clear requirements on public communication and coordination of information amongst all parties involved in the response, including operating organizations, and that these measures have been tested in emergency response exercises.

Suggestion 20 (S20) is closed as the new Instruction IS-44 includes clear requirements for the operators of nuclear facilities in relation to modifications to the on-site emergency response plan, and detailed criteria on what can be considered *changes* or *minor changes*, and how to process them.

10.3. VERIFYING THE ADEQUACY OF ON-SITE EPR OF OPERATING ORGANIZATIONS

There were no findings in this area in the initial IRRS mission.

10.4. ROLES OF THE RB IN A NUCLEAR OR RADIOLOGICAL EMERGENCY

New observation made during the follow-up mission

As response organization within the national emergency management system of Spain, in the recent years, the CSN assumed leadership beyond its responsibilities and developed and established a centralized digital dosimetry system for the protection of first responders and other emergency workers of off-site response organizations in case of a nuclear or radiological emergency. Through the system, the CSN provides emergency workers with sets of two personal dosimeters (one active EPD and one passive TLD) and

electronic cards that store the information on the person and the radiation dose received, and a well-established mechanism to monitor, record, and track in real time the individual radiation doses during the emergency response. The card can be read with a special application (Dosi-app) developed by the CSN which can be installed on a tablet, computer, or smart phone. In the Emergency Response Centre of CSN, SALEM, the application is installed on a desktop and doses of emergency workers are visible in real time.

To implement the system, the CSN procured sets of EPDs, TLDs, and electronic cards for 4000 emergency workers of off-site response organizations. Part of them are pre-distributed in regional access control centres established in line with the emergency planning, and ready to be given to emergency workers when needed. Also, CSN developed training materials and brochures for emergency workers on how to use the Dosi-app and the personal dosimeters, and the system is practiced regularly during emergency response exercises.

The way the system is designed and implemented allows for real time tracking of radiation doses of emergency workers, which enables that exposures are kept at all times below the prescribed reference levels. Also, situations of overexposure are immediately identified and dealt with according to the in place arrangements.

FOLLOW-UP MISSION RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: *As response organization within the national emergency management system of Spain, CSN assumed leadership beyond its responsibilities and established a centralized digital dosimetry system for the protection of emergency workers of off-site response organizations involved in a nuclear or radiological emergency. Through the system, CSN provides emergency workers with: i) set of two personal dosimeters (active EPD and passive TLD); ii) an electronic card that accumulates information on individual radiation doses received through the emergency; and iii) a well-established mechanism for the real time tracking of radiation doses of emergency workers, which enables that exposures are kept at all times below the prescribed reference levels. Also, through the system, situations of overexposure are immediately identified and dealt with according to in place arrangements.*	
(1)	**BASIS: GSR Part 7 para. 5.52 states that** *"The operating organization and response organizations shall ensure that arrangements are in place for the protection of emergency workers and protection of helpers in an emergency for the range of anticipated hazardous conditions in which they might have to perform response functions. These arrangements, as a minimum, shall include: […]* *(c) Managing, controlling and recording the doses received;* *(d) Provision of appropriate specialized protective equipment and monitoring equipment; […]* *g) Medical examination, longer term medical actions and psychological counselling, as appropriate."*
GPF2	**Good Practice: As response organization, the CSN established a centralised digital dosimetry system to be used during emergencies for monitoring radiation doses of emergency workers of off-site response organizations. The system allows for the real time tracking of radiation doses and enables exposures to be kept at all times below the prescribed reference levels. Also, situations of overexposure are immediately identified and dealt with, according to in place arrangements.**

APPENDIX I - RECOMMENDATIONS (RF), SUGGESTIONS (SF) AND GOOD PRACTICES (GPF) FROM THE 2025 IRRS FOLLOW UP MISSION

Module	Section	RF/SF/GPF	Recommendation, Suggestion or Good Practice
5	**5.8**	**GPF1**	**The Digital Radiation Passbook meets the criteria for superior performance and exceeds the standards generally observed elsewhere. No other country has developed a digital platform that provides users with up-to-date dose data, reduces the need for manual data input, and enables real-time statistical analysis.** **The passbook serves as a valuable model for other regulatory bodies seeking to enhance data management for exposed workers, facilities, and activities.**

APPENDIX II – LIST OF PARTICIPANTS

INTERNATIONAL EXPERTS:		
MORRIS Scott	U.S. Nuclear Regulatory Commission	scott.morris@nrc.gov
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ZARZUELA JAVIER	Spanish Nuclear Safety Council (CSN)	jzj@csn.es

GROUP PHOTO

APPENDIX III – LIST OF COUNTERPARTS

	IRRS EXPERTS	Lead Counterpart	Support Staff
1.	**RESPONSIBILITIES AND FUNCTIONS OF THE GOVERNMENT**		
	Rosa Sardella	Carmen Muñoz (CSN)	Teresa Udaondo (CSN), Isabel Villanueva (CSN), Inmaculada Simón (CSN), Alfredo de los Reyes (CSN), María Luisa Ramirez (CSN),José Manuel Redondo (MITECO), Jesús Tardón (MITECO), Jaime De Ponga (MITECO), María Fernández García (MoH), Nuria Prieto (MoH)
3.	**RESPONSIBILITIES AND FUNCTIONS OF THE REGULATORY BODY**		
	Richard Escoffier	Teresa Udaondo (CSN), Cristina Les (CSN)	Sara Corres (CSN), Carlos Castelao (CSN), Inmaculada Simón (CSN)
4.	**MANAGEMENT SYSTEM OF THE REGULATORY BODY**		
	Jean-Rene Jubin	Alfredo Mozas (CSN)	Teresa Udaondo (CSN), Santiago Aleza (CSN), Ana Hernández (CSN)
5.	**AUTHORIZATION**		
	Christian Schorn Ronald Pacheco Jimenez	Isabel Villanueva (CSN), Manuel García (CSN), Inmaculada Simón (CSN)	Luisa Ramírez (CSN), Paula Muñoz (CSN), Ignacio Calavia (CSN), Cristina Les (CSN), Juan José Montesinos (CSN), Francisco Gallardo (CSN), Eneko Zugazagoitia
6.	**REVIEW AND ASSESSMENT**		
	Christian Schorn Ronald Pacheco Jimenez	Inmaculada Simón (CSN), Manuel García (CSN)	Marta García-Talavera (CSN), José Ignacio Serrano (CSN), Cristina Les (CSN), Juan José Montesinos (CSN), Francisco Gallardo (CSN), Eneko Zugazagoitia (CSN), José Luis Revilla (CSN), Susana Solís (CSN), Sofía Luque (CSN), Santiago González (MoH)

	IRRS EXPERTS	Lead Counterpart	Support Staff
7.	**INSPECTION**		
	Christian Schorn	Cristina Les (CSN)	Juan José Montesinos (CSN), Francisco Gallardo (CSN), Manuel García-Leiva (CSN), Eneko Zugazagoitia (CSN)
8.	**ENFORCEMENT**		
	Richard Escoffier	Belén Bada (CSN)	Sara Corres (CSN), Isabel Villanueva (CSN)
9.	**REGULATIONS AND GUIDES**		
	Richard Escoffier Christian Schorn Ronald Pacheco Jimenez	Santiago Aleza (CSN), Inmaculada Simón (CSN), Isabel Villanueva (CSN)	Ana Hernández (CSN), Julián Frigols (CSN), José Luis Revilla (CSN), Susana Solís (CSN), Sofía Luque (CSN), Jaime García De La Sen (CSN), María Luisa Ramírez (CSN), Paula Muñoz (CSN), Ignacio Calavia (CSN), María Fernández García (MoH), Nuria Prieto (MoH)
10.	**EMERGENCY PREPAREDNESS AND RESPONSE – REGULATORY ASPECTS**		
	Adriana Baciu	Javier Ramón (CSN)	José Manuel Martín (CSN), Antonio Ortiz (CSN), Rubén Sande (MoI), Carlos García-Vegas (MoI)

APPENDIX IV – MISSION PROGRAMME

<table>
<tr><th>Time</th><th>SUN</th><th>MON</th><th>TUE</th><th>WED</th><th colspan="2">THU</th><th>FRI</th><th>SAT</th><th>SUN</th><th>MON</th></tr>
<tr><td>09:00-10:00</td><td rowspan="3">Arrival of Team Members</td><td rowspan="2">Entrance Meeting
ROOM 4</td><td rowspan="3">Interviews</td><td>TM write Report TL and DTL review introductory part</td><td colspan="2" rowspan="2">Discussion between Counterpart and Expert</td><td></td><td></td><td rowspan="3"></td><td rowspan="2">Exit Meeting (1h)
AUDITORIUM

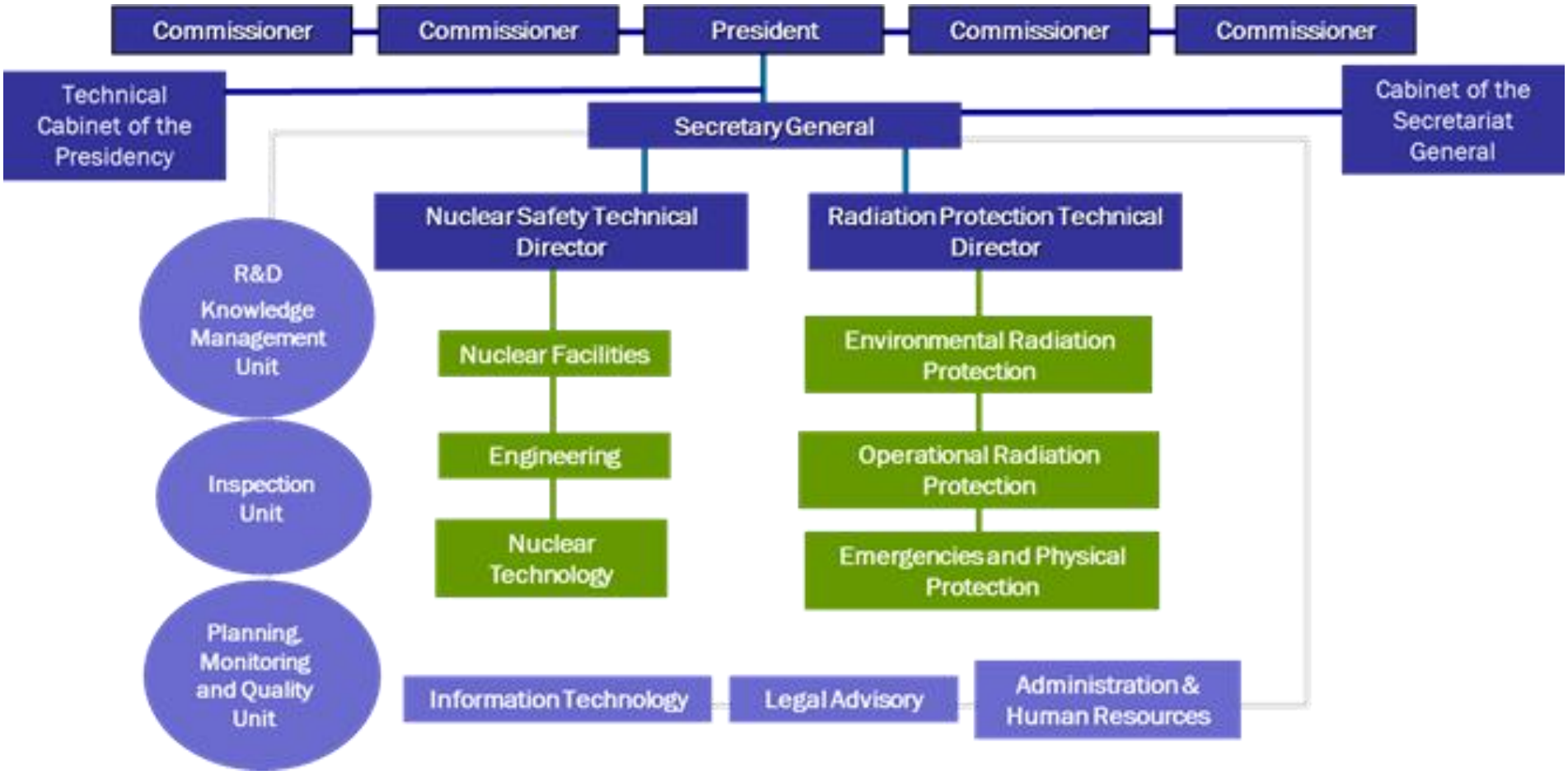
Press release</td></tr>
<tr><td>10:00-11:00</td><td rowspan="2">Written comments by the Host</td><td rowspan="3">Finalization of the report

Preliminary report sent to the Host</td></tr>
<tr><td>11:00-12:00</td><td>Interviews</td><td>Draft text to TL</td><td colspan="2">Finalisation of draft report
ROOM 2</td><td rowspan="2">Social Event</td></tr>
<tr><td>12:00-13:00</td><td>Lunch room</td><td>Lunch room</td><td>Lunch room</td><td colspan="2">Lunch room</td><td>Lunch room</td><td>Farewell</td></tr>
<tr><td>13:00-14:00</td><td rowspan="4">Registration

IRRS team entrance meeting
(IRRS team + LO)

Introduction Refresher Training
Initial IRRS Team Briefing
ROOM 2</td><td rowspan="4">Interviews</td><td rowspan="3">Interviews</td><td>Policy discussion
ROOM 4</td><td rowspan="4">Host reads Draft and prepares written comments</td><td rowspan="2">IRRS team discussion to provide IAEA with feedback
ROOM 2</td><td rowspan="2">IRRS team discusses Host comments
ROOM 2</td><td rowspan="4">Departure of IRRS Team Members</td></tr>
<tr><td>14:00-15:00</td><td>Cross-reading</td></tr>
<tr><td>15:00-16:00</td><td>Secretariat edits the report</td><td><u>Team Leads</u>
Finalization Exit Meeting Presentation, Executive Summary, Review draft Press Release, if ready</td><td rowspan="2">Plenary (Team + Host) to discuss Host comments
ROOM 4</td></tr>
<tr><td>16:00-17:00</td><td>Written preliminary findings delivered</td><td>Preliminary Draft Report Ready</td></tr>
<tr><td>17:00-18:00</td><td>Daily Team Meeting
ROOM 2</td><td>Daily Team Meeting: Discussion of findings
ROOM 2</td><td>Daily Team Meeting
ROOM 2</td></tr>
</table>

APPENDIX V – ORGANIZATIONAL CHART



APPENDIX VI – COUNTERPART'S REFERENCE MATERIAL USED FOR THE REVIEW

N.	Document
1	Self-Assessment Report for the IRRS Follow-Up Mission - Spain (26.11.2025)
2	Policy Issue Proposal (26.11.2025)
3	Royal Decree 1217/2024 of December 3, approving the Regulation on nuclear and radioactive facilities, and other activities related to the exposure to ionizing radiation
4	CSN Management System Manual (Rev. 4)
5	Royal Decree-Law 6/2023 of 19 December, approving urgent measures for the implementation of the Recovery, Transformation and Resilience Plan in the areas of public justice services, civil service, local government and patronage (19.12.2023)
6	Royal Decree 1029/2022 of 20 December, approving the Regulation on health protection against the dangers arising from exposure to ionising radiation (20.12.2022)
7	Statute of the Spanish Nuclear Safety Council (22.11.2010)
8	National Plan against Radon, From the Ministry of Health (20.12.2022)
9	CSN Human Resources Plan (19.12.2024)
10	Agenda Proposal by International Experts (IRRS Interviews) (17.01.2025)
11	IRRS Counterparts (Who is Who?)
12	IRRS Follow-Up Exit Meeting Agenda Proposal (24.01.2025)
13	IRRS Follow-Up Entrance Meeting Agenda Proposal (24.01.2025)
14	Presentation of the Ministry of Heal at the IRRS Follow-Up Mission (27.01.2025)
15	Health System Patient Safety Strategy Evaluation Report (2015-2020)
16	Minutes of the follow-up meeting of the general protocol for action with the Ministry of Health on radiological protection. of Health on radiological protection (05.06.2024) NOT PUBLIC
17	Transfer Calendar and Life Cycle (25.10.2018)
18	CSN Training Program 2024 (03.04.2024)
19	Training program (Excel)
20	Training Courses Quadrant
21	Policy Development Procedure from CSN (19.07.2020)
22	Creation of Independent Administrative Authorities
23	Dose Assessment to the Members of the Public Resulting from the Transport Activity in Spain (11.06.2023)
24	Clarification to Rosa Sardella on Suggestion 3
25	Presentation from the Spanish Nuclear Safety Council for the IRRS Follow-Up Mission (27.01.2025)
26	Presentation from the Spanish Nuclear Safety Council, at the Information Committee of Almaraz NPP (February 2023)

27 Presentation from the Spanish Nuclear Safety Council on the Regulation on the Protection of Health against the Risks Arising from Exposure to Ionising Radiation
28 Presentation from the Civil Protection and Emergencies, at the Information Committee of Almaraz NPP (February 2023)
29 Meeting of the Information Committee of Almaraz NPP (February 2023)
30 Draft Minutes Of The 22nd Meeting Of The Local Information Committee Of The Almaraz Nuclear Power Plant Of The Almaraz Nuclear Power Plant (14.02.2023)
31 Report on Completed R&D&i Projects Completed during the Year 2024
32 Report on the Results of the Annual Programme of Inspections of Radioactive Material Transport Activities (2022)
33 Report on the Results of the Annual Programme of Inspections of Radioactive and Radiodiagnostic Installations (2023)
34 Minutes of the Meeting Of The Nuclear Safety Council (CSN), Ministry For Ecological Transition And Demographic Challenge (MITECO) And The Autonomous Communities, In Relation To Work Activities With Special Exposure To Natural Radiation (05.05.2023)
35 Minutes of the Meeting between the Ministry of Energy, Tourism and the Digital Agenda (MINETAD), the Nuclear Safety Council (CSN) and the Autonomous Communities with functions and services transferred in the area of radioactive facilities (14.07.2022)
36 Minutes of the Meeting between the Ministry of Energy, Tourism and the Digital Agenda (MINETAD), the Nuclear Safety Council (CSN) and the Autonomous Communities with functions and services transferred in the area of radioactive facilities (22.02.2018)
37 Information on dose for the lens of the eyes for the occupationally workers (28-01.2025)
38 Policy Issue Presentation (29.01.2025)
39 Former Management System Manual (13.12.2017)
40 Additional information related to the Royal Decree on nuclear safety for nuclear installations (28.01.2015)
41 Royal Decree 1400/2018, of 23 November, approving the Regulation on nuclear safety at nuclear facilities (23.11.2018)
42 Public Consultation for CSN Instruction on Safety Criteria for the Management of Low and Intermediate level Radioactive Waste Prior to Disposal
43 Public Consultation for CSN Instruction on the Dismantling of Nuclear Facilities and Radioactive Facilities of the Nuclear Fuel Cycle
44 CSN presentation for Module 9 - R11 (27.01.2025)
45 CSN Presentation for Module 9 - S25 (27.01.2025)

46 Favourable Report on Radiation Protection Aspects of the Basic Remediation Project for the El Hondón Site (Cartagena) (31.03.2023)
47 Letter of CSN to MITECO on the Authorisation for the Transfer of Radioactive Material to the National Company for Radioactive Waste Management (ENRESA), requested by ERCROS SA (05.07.2023)
48 Letter of CSN to MITECO with Request for Additional Information regarding the Request for a Report on the Contaminated Soil on the Site where the Factory of Española del Zinc is Located, in Torreciega, municipality of Cartagena (Murcia) (04.11.2024)
49 PLABEN - Basic Nuclear Emergency Plan
50 DBRR - Basic Guideline for civil protection planning in the face of radiological risk
51 CSN Guide GS 01-09 Rev. 2 - Emergency preparedness at nuclear facilities and documentation of their management system

52 CSN Guide GS 01-03 - Planning and response to nuclear facility emergencies
53 Spanish Constitution, of December 27, 1987. Article 103
54 Law 40/2015, of October 1, on the Legal Regime of the Public Sector. Articles 140-158
55 Law 39/2015, of October 2, of the Common Administrative Procedure of Public Administrations. Article 61.
56 Management Procedure PG-IV-05 "Enforcement actions of the CSN on the nuclear safety or radiation protection matters" on February 2, 2019
57 Example of an official letter in which the proposal to initiate a sanctioning procedure is transferred to the autonomous community and community response
58 Example of a request for information on the initiation, investigation and resolution of a sanctioning procedure to the autonomous community and response
59 Letters sent to the representatives of the autonomous communities in order to set a meeting to reinforce collaboration
60 CSN Revision of the management system (PA.XI.16)
61 Communication on reactivation of Working Group on documentation and ToR
62 CSN presentation for Module 9 - R11
63 CSN Presentation for Module 9 - S25
64 Annual Regulation Plan for 2023 (01.02.2023)
65 Annual Regulation Plan for 2024 (04.12.2023)
66 Annual Evaluation Report of the Annual Regulation Plan for 2023 (18.03.2024)
67 Preparatory sheets for the Annual Regulation Plan for 2024 (2 files: contribution from DSN and DPR)
68 Information regarding the creation of public administrative authorities
69 PA III 01 development of regulations
70 Law 31/2022, of 23rd December, approving the State General Budget for 2023.

APPENDIX VII – IAEA REFERENCE MATERIAL USED FOR THE REVIEW

1. INTERNATIONAL ATOMIC ENERGY AGENCY - Fundamental Safety Principles, No SF-1, IAEA, Vienna (2006)
2. INTERNATIONAL ATOMIC ENERGY AGENCY - Governmental, Legal and Regulatory Framework for Safety, General Safety Requirements Part 1, No GSR Part 1 (Rev. 1), IAEA, Vienna (2016)
3. INTERNATIONAL ATOMIC ENERGY AGENCY – Leadership and Management for Safety, General Safety Requirements Part 2, No GSR Part 2, IAEA, Vienna (2016)
4. INTERNATIONAL ATOMIC ENERGY AGENCY - Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards, General Safety Requirements Part 3, No GSR Part 3, IAEA, Vienna (2014).
5. INTERNATIONAL ATOMIC ENERGY AGENCY - Safety assessment for facilities and activities, General Safety Requirements Part 4, No GSR Part 4 (Rev. 1), IAEA, Vienna (2016)
6. INTERNATIONAL ATOMIC ENERGY AGENCY - Predisposal Management of Radioactive Waste, General Safety Requirements Part 5, No GSR Part 5, IAEA, Vienna (2009)
7. INTERNATIONAL ATOMIC ENERGY AGENCY - Decommissioning of Facilities, General Safety Requirements No GSR Part 6, IAEA, Vienna (2014)
8. INTERNATIONAL ATOMIC ENERGY AGENCY - Preparedness and Response for Nuclear or Radiological Emergency, General Safety Requirements No GSR Part 7, IAEA, Vienna (2015)
9. INTERNATIONAL ATOMIC ENERGY AGENCY - Site Evaluation for Nuclear Installations, Specific Safety Requirements No SSR-1, IAEA, Vienna (2003)
10. INTERNATIONAL ATOMIC ENERGY AGENCY - Safety of Nuclear Power Plants: Design, Specific Safety Requirements No SSR-2/1 (Rev. 1), IAEA, Vienna (2016)
11. INTERNATIONAL ATOMIC ENERGY AGENCY - Safety of Nuclear Power Plants: Commissioning and Operation, Specific Safety Requirements No SSR-2/2 (Rev. 1), IAEA, Vienna (2016)
12. INTERNATIONAL ATOMIC ENERGY AGENCY - Safety of Research Reactors, Specific Safety Requirements No SSR-3, IAEA, Vienna (2016)
13. INTERNATIONAL ATOMIC ENERGY AGENCY - Safety of Nuclear Fuel Cycle Facilities, Specific Safety Requirements No SSR-4, IAEA, Vienna (2017)
14. INTERNATIONAL ATOMIC ENERGY AGENCY - Disposal of Radioactive Waste, Specific Safety Requirements No SSR-5, IAEA, Vienna (2011)
15. INTERNATIONAL ATOMIC ENERGY AGENCY - Regulations for the Safe Transport of Radioactive Material, 2018 Edition, Specific Safety Requirements No SSR-6 (Rev. 1), IAEA, Vienna (2018)
16. INTERNATIONAL ATOMIC ENERGY AGENCY - Classification of Radioactive Waste, General Safety Guide No GSG-1, IAEA, Vienna (2009)
17. INTERNATIONAL ATOMIC ENERGY AGENCY - Criteria for use in Preparedness and Response for a Nuclear or Radiological Emergency, General Safety Guide No GSG-2, IAEA, Vienna (2011)
18. INTERNATIONAL ATOMIC ENERGY AGENCY - Communication and Consultation with Interested Parties by the Regulatory Body, General Safety Guide No GSG-6, IAEA, Vienna (2017)
19. INTERNATIONAL ATOMIC ENERGY AGENCY - Occupational Radiation Protection, Safety Guide No GSG-7, IAEA, Vienna (2018)
20. INTERNATIONAL ATOMIC ENERGY AGENCY - Regulatory Control of Radioactive Discharges to the Environment, Safety Guide No GSG-9, IAEA, Vienna (2018)

21. INTERNATIONAL ATOMIC ENERGY AGENCY - Organization, Management and Staffing of the Regulatory Body for Safety, General Safety Guide No GSG-12, IAEA, Vienna (2018)
22. INTERNATIONAL ATOMIC ENERGY AGENCY - Functions and Processes of the Regulatory Body for Safety, General Safety Guide No GSG-13, IAEA, Vienna (2018)
23. INTERNATIONAL ATOMIC ENERGY AGENCY Leadership, Management and Culture for Safety in Radioactive Waste Management, Safety Guide No GSG-16, IAEA, Vienna (2022)
24. INTERNATIONAL ATOMIC ENERGY AGENCY - Arrangements for Preparedness for a Nuclear or Radiological Emergency, Safety Guide No GS-G-2.1, IAEA, Vienna (2007)
25. INTERNATIONAL ATOMIC ENERGY AGENCY - Modifications to Nuclear Power Plants, Safety Guide No SSG-71, IAEA, Vienna (2022)
26. INTERNATIONAL ATOMIC ENERGY AGENCY - Recruitment, Qualification and Training of Personnel for Nuclear Power Plants, Safety Guide No NS-G-2.8, IAEA, Vienna (2002)
27. INTERNATIONAL ATOMIC ENERGY AGENCY - Environmental and Source Monitoring for Purposes of Radiation Protection, Safety Guide No RS-G-1.8, IAEA, Vienna (2005)
28. INTERNATIONAL ATOMIC ENERGY AGENCY - Safety of Radiation Generators and Sealed Radioactive Sources, Safety Guide No RS-G-1.10, IAEA, Vienna (2008)
29. INTERNATIONAL ATOMIC ENERGY AGENCY - Borehole Disposal Facilities for Radioactive Waste, Safety Guide No SSG-1, IAEA, Vienna (2009)
30. INTERNATIONAL ATOMIC ENERGY AGENCY - Deterministic Safety Analysis for Nuclear Power Plants, Specific Safety Guides No SSG-2, IAEA, Vienna (2010)
31. INTERNATIONAL ATOMIC ENERGY AGENCY - Development and Application of Level 1 Probabilistic Safety Assessment for Nuclear Power Plants, Specific Safety Guide No SSG-3, IAEA, Vienna (2010)
32. INTERNATIONAL ATOMIC ENERGY AGENCY - Development and Application of Level 2 Probabilistic Safety Assessment for Nuclear Power Plants, Specific Safety Guide No SSG-4, IAEA, Vienna (2010)
33. INTERNATIONAL ATOMIC ENERGY AGENCY - Safety of Conversion Facilities and Uranium Enrichment Facilities, Specific Safety Guide No SSG-5, IAEA, Vienna (2010)
34. INTERNATIONAL ATOMIC ENERGY AGENCY - Safety of Uranium Fuel Fabrication Facilities Specific Safety Guide No SSG-6, IAEA, Vienna (2010)
35. INTERNATIONAL ATOMIC ENERGY AGENCY - Safety of Uranium and Plutonium Mixed Oxide Fuel Fabrication Facilities, Specific Safety Guide No SSG-7, IAEA, Vienna (2010)
36. INTERNATIONAL ATOMIC ENERGY AGENCY - Licensing Process for Nuclear Installations, Specific Safety Guide No SSG-12, IAEA, Vienna (2010)
37. INTERNATIONAL ATOMIC ENERGY AGENCY - Geological Disposal Facilities for Radioactive Waste Specific Safety Guide No SSG-14, IAEA, Vienna (2011)
38. INTERNATIONAL ATOMIC ENERGY AGENCY - Storage of Spent Nuclear Fuel, Safety Guide No SSG-15 (Rev. 1), IAEA, Vienna (2020)
39. INTERNATIONAL ATOMIC ENERGY AGENCY - Periodic Safety Review for Nuclear Power Plants, Safety Guide No SSG-25, IAEA, Vienna (2013)
40. INTERNATIONAL ATOMIC ENERGY AGENCY - Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material Specific Safety Guide (2018 Edition) No SSG-26 (Rev.1), IAEA, Vienna (2022)
41. INTERNATIONAL ATOMIC ENERGY AGENCY - Commissioning for Nuclear Power Plants, Safety Guide No SSG-28, IAEA, Vienna (2014)

42. INTERNATIONAL ATOMIC ENERGY AGENCY - Predisposal Management of Radioactive Waste from Nuclear Power Plants and Research Reactors, Safety Guide No SSG-40, IAEA, Vienna (2016)
43. INTERNATIONAL ATOMIC ENERGY AGENCY - Predisposal Management of Radioactive Waste from Nuclear Fuel Cycle Facilities, Safety Guide No SSG-41, IAEA, Vienna (2016)
44. INTERNATIONAL ATOMIC ENERGY AGENCY - Management of Waste from the Use of Radioactive Material in Medicine, Industry, Agriculture, Research and Education, Safety Guide No SSG-45, IAEA, Vienna (2019)
45. INTERNATIONAL ATOMIC ENERGY AGENCY - Radiation Protection and Safety in Medical Uses of Ionizing Radiation, Safety Guide No SSG-46, IAEA, Vienna (2018)
46. INTERNATIONAL ATOMIC ENERGY AGENCY - Decommissioning of Nuclear Power Plants, Research Reactors and Other Nuclear Fuel Cycle Facilities, Safety Guide No SSG-47, IAEA, Vienna (2018)
47. INTERNATIONAL ATOMIC ENERGY AGENCY – Ageing Management and Development of a Programme for Long Term Operation of Nuclear Power Plants, Safety Guide No SSG-48, IAEA, Vienna (2018)
48. INTERNATIONAL ATOMIC ENERGY AGENCY –Decommissioning of Medical, Industrial and Research Facilities, Safety Guide No SSG-49, IAEA, Vienna (2019)
49. INTERNATIONAL ATOMIC ENERGY AGENCY – Operating Experience Feedback for Nuclear Installations, Safety Guide No SSG-50, IAEA, Vienna (2018)
50. INTERNATIONAL ATOMIC ENERGY AGENCY - Accident Management Programmes for Nuclear Power Plants, Safety Guide No SSG-54, IAEA, Vienna (2019)
51. INTERNATIONAL ATOMIC ENERGY AGENCY - Preparedness and Response for a Nuclear or Radiological Emergency Involving the Transport of Radioactive Material, Safety Guide No SSG-65, IAEA, Vienna (2022)
52. INTERNATIONAL ATOMIC ENERGY AGENCY - Radiation Protection Programmes for the Transport of Radioactive Material, Safety Guide No TS-G-1.3, IAEA, Vienna, (2007)
53. INTERNATIONAL ATOMIC ENERGY AGENCY - The Management System for the Safe Transport of Radioactive Material Safety Guide No TS-G-1.4, IAEA, Vienna (2008)
54. INTERNATIONAL ATOMIC ENERGY AGENCY - Compliance Assurance for the Safe Transport of Radioactive Material, Safety Guide No TS-G-1.5, IAEA, Vienna (2009)
55. INTERNATIONAL ATOMIC ENERGY AGENCY - Schedules of Provisions of the IAEA Regulations for the Safe Transport of Radioactive Material (2018 Edition), Specific Safety Guide No SSG-33 (Rev.1) IAEA, Vienna (2021)
56. INTERNATIONAL ATOMIC ENERGY AGENCY - Storage of Radioactive Waste, Safety Guide No WS-G-6.1, IAEA, Vienna (2006)
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