Convention on Nuclear Safety
Seventh National Report by Portugal
(August 2019)

Portuguese Environment Agency

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Index:

Frequently used Acronyms

APA	Portuguese Environment Agency (Agência Portuguesa do Ambiente)
CNS	Convention on Nuclear Safety
DGEG	General Directorate of Energy and Geology (Direção-Geral de Energia e Geologia)
EC	European Commission
EU	European Union
HEU	High Enriched Uranium
IAEA	International Atomic Energy Agency
IGAMAOT Planning	Inspectorate-General for Agriculture, Sea, Environment and Spatial
IST	Instituto Superior Técnico
LEU	Low Enriched Uranium
MATE	Ministry of Environment and Energy Transition (Ministério do Ambiente e da Transição Energética)
ME	Ministry of Economy, previously Ministry of Economy and Innovation (Ministério da Economia)
MCTES	Ministry of Science, Technology and Higher Education (Ministério da Ciência, Tecnologia e Ensino Superior)
RPI	Portuguese Research Reactor (Reator Português de Investigação)

Convention on Nuclear Safety
8th National Report by Portugal
(August 2019)

A. Introduction

This report gives an overview on the present Portuguese nuclear policy, legislation and new measures relating to Nuclear Safety and Radiation Protection.

Portugal has no nuclear installations, as defined in the Convention on Nuclear Safety (CNS), and all exploration of uranium ore was terminated in the year 2000. Consequently, only some of the obligations resulting from the CNS are relevant to the Portuguese National Report. That being said, and for the sake of transparency and international cooperation, the present report provides not only information on the present status of the national regulatory infrastructure related to Nuclear Safety and Radiation Protection, but also information on the Portuguese Research Reactor (RPI), applying to it the CNS reporting requirements on the basis of comity since the RPI is not a nuclear installation as defined in the CNS.

The CNS was signed by Portugal on the 3rd of October 1994. The Portuguese Parliament approved the CNS for ratification by Resolution 9/98, of January 22nd 1998, and the Presidential Decree 9/98, of March 19th 1998, ratified it. On May 20th 1998 the instrument of ratification was deposited, and the Convention entered into force on the 18th of August 1998.

As already reported at the 7th CNS Review Meeting, the regulatory framework for nuclear safety in Portugal consists of Decree-Law 30/2012, of February 9th, that created the regulatory body for this area, complemented by Decree-Law 262/2012, of December 17th, that establishes the obligations for the license holders. Both these legal documents were later amended by Decree-Law 135/2017, of October 20th, that updated those legal provisions in order to ensure compliance with Directive 2014/87/EURATOM, from the Council, from July 8th. A further revision of these legal

documents took place with the publication of Decree-Law 108/2018, of December 3rd, that transposed Directive 2013/59/EURATOM, from the Council, of December 5th and transferred all regulatory duties from the previous regulatory body to the Portuguese Environment Agency (APA), with the exception of inspection, which is carried out by the Inspectorate-General for Agriculture, Sea, Environment and Spatial Planning (IGAMAOT). APA is now responsible for preparing the CNS report and representing Portugal at the Review Meetings as part of the Portuguese delegation.

The National Programme for the Management of Spent Fuel and Radioactive Waste was approved by the Council of Ministers Resolution 122/2017, from July 27th, after undergoing a Strategic Environmental Assessment procedure with public participation. A new programme is being prepared by APA.

The RPI is a pool type research reactor (1 MW) operated until 2016 by the Instituto Superior Técnico (IST). IST is a Faculty of Engineering, which, since July 25th 2013, is part of the University of Lisbon as a result of the merge of two major universities in Lisbon: the University of Lisbon and the Technical University of Lisbon. The new university is a public body under the Ministry of Science Technology and Higher Education (MCTES). In early 2019, under a bilateral agreement with the United States of America Department of Energy, all nuclear fuel was removed from the RPI and sent back to the United States for disposal. Therefore, no nuclear fuel or spent fuel exists in Portugal as of early 2019. The RPI is currently in transition to decommissioning, waiting the preparation of the decommissioning plan by IST and subsequent approval by APA.

In the sixties, Portugal underwent efforts to install a Nuclear Power Plant, but soon abandoned this project after strong opposition from the public in 1976. The Energy Plan revised in 1984 included a nuclear option that was never implemented. The Ministry of Environment and Energy Transition does not operate any facilities subject to the NSD, nor has any attributions concerning the promotion of utilization of nuclear energy. It should be noted that Portugal has long made a commitment not to pursue the production of energy by nuclear means, which is clear in the National Energy and Climate Plan 2030 whose proposal has been in public consultation last June.

Although Portugal has no plans to build nuclear installations as defined in the CNS, it agrees with the international principles aimed at enhancing the nuclear safety culture.

For this reason, Portugal strongly supports the CNS and all the related international reporting activities.

In accordance with the CNS reporting guidelines, only activities concerning articles 7, 8 and 16 will be reported and information about the activities covered by articles 9, 10 and 15 will be provided. As mentioned before, on the basis of comity, a few lines on the RPI, article 6, are also included.

B. Summary

As reported in the 7th Review Meeting, Portugal completed the transposition of the Council Directive 2009/71/EURATOM, of June 25th 2009, which establishes a Community framework for the nuclear safety of nuclear installations, through the publication of two Decree-Laws (Decree-Law 30/2012 and Decree-Law 262/2012), and the appointment by the Prime Minister of the Commissioners responsible for the regulatory authority.

Decree-Law 30/2012 of February 9th created the Regulatory Commission for the Safety of Nuclear Installations (COMRSIN) and established its attributes and responsibilities.

Shortly afterwards, Decree-Law 262/2012, of December 17th, which sets out the obligations of the license holders for the operation of nuclear installations, including their duty to continuously improve safety under the supervision of the regulatory authority.

With these three important changes made in the regulatory and legal infrastructure mentioned above, Portugal complied with Directive 2009/71/EURATOM, as recognized by European Commission.

The subsequent publication of Directive 2014/87/EURATOM, from the Council, from July 8th led to revisions of the legal framework for nuclear safety that took place when Decree-Law 135/2017, of October 20th, was published. This legal document updated the legal provisions in Decree-Law 30/2012 and 262/2012 in order to ensure compliance with the revised Directive.

A further revision to the legal framework took place with the publication of Decree-Law 108/2018, of December 3rd, that transposed Directive 2013/59/EURATOM, from the Council, of December 5th. This revision, while focusing on radiation safety, also led to the extinction of COMRSIN and transferred all its regulatory duties to the Portuguese Environment Agency (APA). APA is a public institute part of the indirect administration of the Government, with administrative and financial autonomy, under the Ministry of Environment and Energy Transition. The Ministry of Environment and Energy Transition does not operate any facilities subject to CNS, nor has any attributions concerning the promotion of utilization of nuclear energy or other uses of ionizing radiation, providing for effective independence of the regulatory body.

In 2013, Portugal transposed Council Directive 2011/70/EURATOM, of July 19th, which establishes a Community framework for the responsible and safe management of spent fuel and radioactive waste, into its legal framework through Decree-Law 156/2013, of November 5th. This Decree-Law was later amended by Decree-Law 108/2018, that assigned to APA the regulatory and licensing authority over the safe management, storage and transportation of spent fuel and radioactive waste into, through and out of Portugal. The National Programme for the Management of Spent Fuel and Radioactive Waste was approved by the Council of Ministers Resolution 122/2017, from July 27th, after undergoing a Strategic Environmental Assessment procedure with public participation. A new programme is being prepared by APA.

As mentioned before, Portugal has no nuclear installations as defined in the CNS. However, Portugal has a pool type research reactor, the RPI. In February 2016, the RPI underwent a safety assessment in the framework of an Integrated Nuclear Safety Assessment of the Research Reactor's mission run by the International Atomic Energy Agency. On May 11th 2016 the operation of the reactor was halted for the yearly maintenance. On September 14th, 2017, IST has informed the regulatory body that it was going to propose to the Government that the RPI be decommissioned; however, the decommissioning plan has not been prepared yet. Nevertheless, all the nuclear fuel was removed from the RPI in early 2019 and shipped to the United States of America, under a take back program sponsored by the Department of Energy.

The present report will avoid repeating what has been described in detail in previous reports, but it is designed to be a stand-alone, complete and transparent report. Emphasis will be made on the changes that have taken place and on the difficulties that are faced to implement international requirements associated with good practices on nuclear safety in a way that is commensurable with the dimension of Portuguese nuclear program.

C. Reporting Article by Article

Article 6 – Existing nuclear installations

As mentioned in the introduction, Portugal has no nuclear installations as defined in the CNS. However, Portugal has a pool type research reactor (1 MW), which is installed in the campus of IST, under the direct control of the President of IST, who reports directly on these issues to the Minister of Science, Technology and Higher Education (MCTES). At present there is no nuclear fuel or spent fuel stored in the pool of the RPI or anywhere else in Portugal.

The RPI has operated for more than 50 years. In 2017, the operator decided to propose to the government that it should be decommissioned. Following that decision, all the nuclear fuel was removed from the RPI in early 2019 and shipped to the United States of America, under a take back program sponsored by the Department of Energy. There is currently no nuclear fuel or spent fuel in Portugal, and there is no intention of resuming a nuclear programme at this time. The decommissioning plan for the RPI will have to be prepared by the operator and submitted to approval by APA.

Article 7 – Legislative and Regulatory framework

Article 7 (1) – Establishing and maintaining a legislative and regulatory framework

The CNS was signed by Portugal on the 3rd of October 1994. The Portuguese Parliament approved the CNS for ratification by Resolution 9/98, of January 22nd 1998, and Presidential Decree 9/98, of March 19th 1998, ratified it. On May 20th 1998, the instrument of ratification was deposited, and the Convention entered into force on the 18th of August 1998.

Likewise, in 2009, Portugal became part the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. Decree 12/2009 of the Ministry of Foreign Affairs, of April 21st, approved Portugal's accession to the Joint Convention. The Convention has entered into force for Portugal on the 13th of August 2009.

Portugal began updating its legislation on nuclear safety in order to comply with Directive 2009/71/EURATOM of June 25th 2009, which sets out the community framework for the safety of nuclear installations. This resulted in the publication of the two Decree-Laws described below.

Decree-Law 30/2012, of February 9th, created the Regulatory Commission for the Safety of Nuclear Installations (COMRSIN), as a regulatory body for nuclear safety, whose members were appointed for a five-year term by the Prime Minister. Its attributions and responsibilities were:

- Promote legislation and regulations on nuclear safety;
- Monitor and inspect nuclear installations in all phases of development from site choice to dismantling;
- Issue or revoke licensing at all stages, assuring a high level of nuclear safety and promoting and preserving the continuous improvement of nuclear safety;
- Authorize and inspect the safe transportation of fresh or irradiated fuel, radioactive sources and their corresponding waste when the source or the destination is a nuclear installation;
- Promote and participate in international cooperation;
- Supervise activities and installations subject to safeguards.

The second one, Decree-Law 262/2012, of December 17th, sets out the obligations of the license holders for the operation of nuclear installations, including their duty to continuously improve safety under the supervision of the regulatory authority. Further details are provided in Article 7 (2)(i).

With these two Decree-Laws, Portugal became in full compliance with the Directive 2009/71/EURATOM, of June 25th 2009, as recognized by the European Commission, and with the requirements of the CNS.

Both these legal documents were later amended by Decree-Law 135/2017, of October 20th, that updated those legal provisions in order to ensure compliance with Directive 2014/87/EURATOM, from the Council, from July 8th.

A further revision of these legal documents took place with the publication of Decree-

Law 108/2018, of December 3rd, that transposed Directive 2013/59/EURATOM, from the Council, of December 5th and transferred all regulatory duties from the previous regulatory body to the Portuguese Environment Agency (APA), with the exception of inspection, which is carried out by the Inspectorate-General for Agriculture, Sea, Environment and Spatial Planning (IGAMAOT).

Following the publication of Decree-Law 156/2013, of November 5th, transposing Directive 2011/70/EURATOM of July 19th 2011, COMRSIN was attributed regulatory and licensing authority over the management, storage and transportation of spent fuel and radioactive waste. This decree-law was also amended by Decree-Law 108/2018, transferring all the associated regulatory duties to APA, with the exception of inspection, which is carried out by the Inspectorate-General for Agriculture, Sea, Environment and Territory (IGAMAOT).

The current regulatory framework has consolidated all the regulatory duties that were assigned to multiple authorities in APA, with the exception of inspection, which is carried out by the Inspectorate-General for Agriculture, Sea, Environment and Spatial Planning (IGAMAOT).

Therefore, at present, Portugal complies with CNS and Joint Convention requirements on the safe management of nuclear installations and the safe management of spent fuel and radioactive waste. More details about national legislation, implementation of safety requirements and regulatory review shall be provided under Article 7(2)(i) below.

Article 7(2)(i) – National safety requirements and regulations

Second tier regulations in Portugal were adopted subsequently to the creation of COMRSIN through Decree-Law 262/2012 of December 17th, which establishes the duties of operators to continuously improve the safety of nuclear installations. Decree-Law 262/2012, which entered into force on December 17th 2013.

This Decree-Law was later amended by Decree-Law 135/2017, in order to ensure compliance with the revised EU Directive on Nuclear Safety, and by Decree-Law 108/2018, that transferred the regulatory duties to APA and IGAMAOT. Its provisions follow IAEA safety criteria and states that:

a) No nuclear installation may operate without a license issued by the regulatory authority for all phases, from site choice to decommissioning (article 8(b) of Decree-Law 30/2012);
b) The operator has the prime responsibility for the safety of the installation under the control of the regulatory authority; this responsibility cannot be delegated or transferred (article 12(1) of Decree-Law 30/2012 and article 4 (2) of Decree-Law 262/2012);
c) The operator is responsible for the safe management of the fuel and of the radioactive waste, including the waste in storage or elimination facilities (article 5 of Decree-Law 262/2012);
d) The operator has to have the human, material and financial resources that are adequate to the safe operation of the installation (article 12(5) of Decree-Law 30/2012 and article 23(1) of Decree-Law 262/2012);
e) Principles such as transparency, defense in depth, priority to nuclear safety at all times, registration of all documents, classification of all structures, systems and components, including control software in terms of their importance for the safety of the installation are required from the operator (articles 6, 9, 12, 17, 18 and 29 of Decree-Law 262/2012);
f) The operator is also required to have a safety policy, a safety management system that gives priority to nuclear safety at all times and where the decision making process is based on the graded approach (articles 16 to 18 of Decree-Law 262/2012);
g) The operator has the prime responsibility for the periodic safety review of the installation and for the continuous improvement of safety (article 32 of Decree-Law 262/2012);
h) Research Reactors shall have a "Safety Commission" that is independent from the management system (article 20 of Decree-Law);
i) All nuclear installations must have a Safety Analysis Report (SAR) that is subject to approval by the regulatory body. In the SAR the operator has to show that the operation complies with the safety standards recommended by the IAEA and with the national requirements for nuclear safety and radiological control. The SAR has to include sufficient information on the

nuclear installation, its operating conditions, its safety and waste management systems, its emergency plans and decommissioning procedures (article 30 of Decree-Law 262/2012);

j) The operator is required to update the SAR whenever necessary or if requested by the regulatory body (article 30 (6) of Decree-Law 262/2012);
k) Besides the SAR, each year the operator shall present an annual report to be assessed by the "Safety Commission" and subsequently submitted to the regulatory body, which has the right to inspect the facility at any time, announced or non-announced (article 31 of Decree-Law 262/2012);
l) The operator has the duty of full cooperation with the regulatory authority, namely providing access to the installations and to any information that may be requested (article 7 (1)(2) of Decree-Law 262/2012);
m) The operator has the duty of notifying the regulatory body of any modification or of any event occurred in the nuclear installation (article 7 (3) of Decree-Law 262/2012);
n) A system of penalties is in place to respond to possible violations of the law (article 34 to 37 of Decree-Law 262/2012).

Concerning the safety of radioactive waste and spent fuel management, these are governed by Decree-Law 156/2013. The provisions in this decree-law address the requirements that public and private entities (health, research and industrial facilities) that use radioactive materials, have to comply with, including the need to obtain a license for managing and/or storing radioactive waste for more than 30 days.

The present legal framework sets up APA as the regulatory body in charge of licensing and regulating the safety of spent fuel management and the safety of radioactive waste management and storage installations, as well as the responsibility to apply clearance and exclusion levels to radioactive materials as legally defined in the Ministerial Order 138/2019, of May 10th, and authorizing the transportation of spent fuel and radioactive waste and spent fuel into, through and out of Portugal. The clearance and exclusion levels mentioned above are the same as in Table A of Council Directives 2013/59/EURATOM, of December 5th 2013. The inspection duties in this area are

carried out by the Inspectorate-General for Agriculture, Sea, Environment and Territory (IGAMAOT).

All public and private entities that use radioactive materials are required to follow the set procedures for the disposal of radioactive waste, and are subject to fines if they do not. Entities that store radioactive waste for more than 30 days need to apply for a license issued by APA, and have the prime responsibility that cannot be delegated or transferred for the waste they produce. Guidance was published by the regulatory body on the safe management of radioactive waste.

The current National Programme for the safe management of spent fuel and radioactive waste, as required by Council Directive 2011/71/EURATOM, has been approved by Resolution from the Council of Ministers 122/2017, after undergoing Strategic Environmental Evaluation as required by EU regulations. A new programme will be prepared by APA.

Article 7(2)(ii) – System of licensing

Under article 8 (b) of Decree-Law 30/2012, all nuclear installations, at all phases, from site choice to decommissioning, require a license. This includes nuclear power plants, research reactors, enrichment and reprocessing plants, and nuclear fuel cycle facilities. The licensing authority is APA.

The RPI, as the sole nuclear installation in Portugal, was first licensed in 2005 by the Ministry of Economy (ME) who granted the operating license on December 27th 2005, by Ministerial Order of the Directorate General of Energy and Geology (DGEG) of the ME, that had that regulatory competency at the time.

In 2017, the operator decided to propose to the government that it should be decommissioned. Following that decision, all the nuclear fuel was removed from the RPI in early 2019 and shipped to the United States of America, under a take back program sponsored by the Department of Energy. There is currently no nuclear fuel or spent fuel in Portugal, and there is no intention of resuming a nuclear programme at this time. The decommissioning plan for the RPI will have to be prepared by the operator and submitted to approval by APA.

Currently, there is no nuclear fuel or spent fuel stored in the reactor.

Nevertheless, until its decommissioning and termination of regulatory control occurs, the RPI still falls under the regulatory and licensing authority of APA, according to Decree-Law 30/2012, amended by Decree-Laws 135/2017 and 108/2018.

Article 7 (2)(iii) – System of regulatory inspections and assessment

In the case of nuclear installations and on the management, storage and transportation of radioactive waste and spent fuel, APA is the sole entity assessment and authorizations, with IGAMAOT in charge of inspections.

As of December 17th 2013, the RPI is subject to Decree-Law 262/2012 that follows IAEA safety criteria and foresees the obligations that are already mentioned in the paragraph 7(2)(i).

Article 7(2)(iv) – Enforcement of applicable regulations and terms of licenses

In the case of all nuclear installations as well as of the management, storage and transportation of spent fuel and radioactive waste, the regulatory body, comprising IGAMAOT and APA, accordingly, may take any of the following enforcing actions:

- Propose corrective measures.
- Suspend operations.
- Shut down of the installation, temporarily or definitely.
- Qualify detected faults and report them to the competent authorities so that the corresponding fines are applied; fines may be as high as 44.891,82€ due to limitations in the legal system under which Decree-Law 262/2012 was adopted.
- Revoke or change the scope of the license following a fully transparent approach and well justified reasons based on a fair assessment of the safety of the installation.

Article 8 – Regulatory body

Article 8(1) – Establishment of the regulatory body

Portugal recently underwent a revision of its regulatory framework for nuclear safety and for radiation protection, consolidating all regulatory duties in the Portuguese Environment Agency (APA), with inspection being carried out by the Inspectorate-General for Agriculture, Sea, Environment and Spatial Planning (IGAMAOT). Both authorities share pertinent information to that effect.

APA is a public institute part of the indirect administration of the Government, with administrative and financial autonomy. This independence is also reinforced by article 12(3) of Decree-Law 108/2018, that transferred the competencies of the previous COMRSIN.

Provisions in Decree-Law 108/2018 (article 12(3)) specify that the competent authority must have dedicated human resources to carry out its regulatory duties. To this effect, APA has permission to recruit up to a maximum of 19 staff members in the near-term. This amount resulted from a previous feasibility study that was carried out, and will be reviewed periodically, based on experience gained in implementing its new regulatory duties. In addition to that, APA includes in the yearly budget an amount to ensure its regulatory duties. This amount resulted from a previous feasibility study that was carried out, and will be reviewed periodically, based on experience gained in implementing its new regulatory duties.

It should be noted that the Ministry of Environment and Energy Transition does not operate any nuclear facilities, nor has any attributions concerning the promotion of utilization of nuclear energy. In fact, Portugal has long made a commitment not to pursue the production of energy by nuclear means, which is clear in the National Energy and Climate Plan 2030 whose proposal has been in public consultation in June 2018.

At present, the competences of APA under Decree-Laws 30/2012, 262/2012 and 156/2013 combined with Decree-Laws 135/2017 and 108/2018, that relate to nuclear safety:

a) Promote the development of legislation and regulations in the field of nuclear

safety, aiming the continuous improvement of instruments to regulate the activity.

b) Assess and monitor the safety of nuclear installations in all phases, from site selection to design, construction, commissioning, operation or dismantling, issuing the corresponding licenses to perform the activity, according to a high standard high of nuclear safety, preserving and promoting continuous improvement of nuclear safety.

c) Inspect, require demonstration of compliance with national requirements of nuclear safety and the terms of the respective license, and take enforcement action, if needed, including amendments in the license and operating conditions or procedures and order temporary or definitive closure of installations, imposing the required measures to protect workers, the population in general and the environment against the risks of exposure to ionizing radiation resulting from the construction, operation or shut down of nuclear facilities.

d) Authorize and monitor the safety and security of the transportation of nuclear fuel, fresh or spent, and radiation sources from or to nuclear installations;

e) Cooperate with the competent authorities in the preparation of plans for education and training of human resources of nuclear installations and of entities related with nuclear safety, to preserve and develop the required qualifications and skills in the field of nuclear safety.

f) Promote and engage, in conjunction with competent authorities, cooperation with foreign counterpart institutions and with specialized international organizations and agencies, ensuring national representation in groups and committees of areas of its responsibilities and to elaborate reports whose submission results from external obligations assumed by the country.

g) Participate in the preparation of international agreements and of scientific and technical cooperation in the field of their assignments, in articulation with competent authorities.

h) Undertake surveillance and inspection of installations or activities subject to a safeguards regime and physical protection, under the Non-Proliferation Treaty

Nuclear and the Additional Protocol;

i) Licensing, evaluating, monitoring and inspecting facilities and activities relating to the management of spent fuel and radioactive waste (encompassing all phases, from initial choice of site to decommissioning);

j) Authorizing and inspecting transports of spent fuel and radioactive waste in Portugal;

k) Characterizing and classifying radioactive materials as radioactive waste;

l) Applying exemption levels, on a case by case basis;

m) Ordering the collection of radioactive waste for storage and disposal;

n) Authorizing the elimination of radioactive waste;

o) Imposing fines for infringements of rules relating to licensing or safety (through the relevant member of Government), suspending or canceling licenses and ordering provisional measures;

p) Preparing and continuously updating an inventory of radioactive waste on national territory, as well as for radiation sources;

q) Making available to workers and the general public the necessary information concerning the management of spent fuel and radioactive waste;

r) Drafting and proposing to the Government legislation in this domain, as well as approving regulations whenever empowered to do so by law;

s) Cooperating with the relevant authorities and international organizations, validating data relating to spent fuel and radioactive waste to be communicated to international organizations, taking part in the preparation of international agreements within this domain;

t) Accompany the aspects of nuclear safety and radiation protection associated with risks of accident in facilities where fissile materials may be used;

u) Maintain a continuous monitoring network to detect situations that may result in unusual increases in environmental radioactivity;

v) Propose corrective measures to ensure the protection of the environment and the population in emergency or existing exposure situations, and coordinate

the radiological aspects of remediation.

In addition to these, APA was assigned with further competencies that cover the area of radiation protection and that fall outside the scope of the CNS.

Inspection and enforcement actions are carried out by IGAMAOT.

Article 9 – Responsibility of the license holder

Under article 12(1) of Decree-Law 30/2012, amended by Decree-Law 135/2017, the license holder for a nuclear facility has prime responsibility for safety and cannot delegate or transfer it. This includes responsibilities over the activities of contractors and subcontractors that may affect the safety of a nuclear facility.

As already mentioned under article 7(2)(iii) above, the license holder of the RPI is IST. The license currently in force was issued in December of 2005 by DGEG of the ME and remained valid for the duration of the existing LEU fuel. With the removal of the nuclear fuel from the RPI in early 2019, the license holder will have to prepare a decommissioning plan and obtain a new license from APA for that phase of the life cycle of the facility.

APA has the legal power to suspend or revoke such license in case there is a compelling and a well-documented safety reason to do so, namely the non-compliance with the regulatory decisions.

The previous regulatory body issued a number of recommendations that were followed by the license holder, namely improving transparency *vis-à-vis* the public in general and supplying the Internal Emergency Plan to the National Authority for Emergencies and Civil Protection (ANPEC) so that an External Emergency Plan could be prepared in case a beyond design basis accident takes place at the RPI. The recent removal of the nuclear fuel from the RPI significantly altered the requirements for the External Emergency Plan being prepared by ANEPC.

Article 10 – Priority to safety

The concept of "priority to safety" was not expressly mentioned in the Portuguese law prior to Decree-Law 262/2012 of December 17th. With this law "priority to safety" is reinforced and embedded in the principles of the law.

Article 15 – Radiation Protection

As previously indicated, Portugal recently underwent a major revision of its legislation relating to radiation protection. Under this new framework, made in accordance with EU Directive 2013/59/EURATOM, the regulatory competencies were consolidated in APA, with the exception of inspection and enforcement, that are carried out by IGAMAOT.

Radiation protection matters are now handled in the following legal documents:

a) Decree-Law 227/2008, of November 25th
   Transposes article 38 of Council Directive 96/29/EURATOM, of May 13th 1996, which requires the establishment of a system of qualified experts and technicians. This Decree-Law also creates the "program for the training of qualified experts and qualified technicians".
   This Decree-Law establishes a common basic training and education framework for all areas of activity, but does not exclude specific approaches in specific sectors of application of ionizing radiation: the medical or industrial sector, education and research. This Decree-Law is regulated by Ministerial Order 195/2015, of June 30th.

b) Decree-Law 198/2009, of August 26th
   Transposes EU Council Directive 2006/117/EURATOM, of November 20th 2006, on the transfer between member countries, third countries and member countries and transportation within Portugal of radioactive waste and spent fuel. With Decree-Laws 156/2013, and Decree-Law 108/2018, APA becomes the national authority for granting authorizations and for verification of the

correct implementation of the Directive in all situations involving the transportation of radioactive waste and spent fuel to, from and within Portugal.

c) Decree-Law 108/2018, of December 3rd transposes EU Council Directive 2013/59/EURATOM, from the Council, from December 5th, laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation, and repealing Directives 89/618/EURATOM, 90/641/EURATOM, 96/29/EURATOM, 97/43/EURATOM and 2003/122/EURATOM. This decree-law creates a new regulatory framework in Portugal, consolidating competencies on APA and IGAMAOT.

This legal framework is entirely modeled on EC Directives. Its content and compliance with the requirements of the CNS is, therefore, easy to assess by comparison with the relevant provisions of EC Law.

Generally, enforcement powers of the listed authorities include the power:

(i) To propose preventive measures to avoid harm or danger;

(ii) To order the immediate suspension of the operation or use of facilities/equipment/activities using/producing radiation;

(iii) To seize material and equipment; and

(iv) To impose fines.

Presently, the central registry of radiation doses received by workers is centralized and kept by APA.

As of December 17th 2013, RPI and its operator IST have to comply with Decree-Laws 30/2012 and 262/2012, aside from the general national legal framework described above, as well as EU law directly applicable or with direct effect in the Portuguese legal order. Decree-Law 262/2012 *inter alia* requires compliance with IAEA safety

standards, integrating them into the Portuguese legal order (see, e.g., articles 16(10) and 30).

Article 16 – Emergency Preparedness

Article 16(1) – Emergency plans and programs

Although no nuclear power plants exist in Portugal, the national hazard assessment has identified several other uses of radiation sources that need emergency planning, namely:

- The Portuguese research reactor, currently in transition to decommissioning, and without any nuclear fuel or spent fuel.
- Industrial radiography and other uses of radioactive sources, including their transport.
- Industrial irradiation.
- Medical activities, namely, nuclear medicine and radiotherapy.
- Foreign nuclear installations, including visiting nuclear powered vessels.

The following laws constitute the current legal framework related to emergencies:

a) Decree 36/80, of May 30th

Ratifies a Portugal-Spain agreement specifically covering the matter, concerning nuclear installations near to the border between the two countries – in a strictly legal approach, however, it should be noted that there are no installations presently existing that fall under that category and to which, therefore, this agreement could be applied.

b) Decree-Law 108/2018, of December 3rd

Transposes EU Council Directive 2013/59/EURATOM, from the Council, from December 5th, laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation, and repealing Directives 89/618/EURATOM, 90/641/EURATOM, 96/29/EURATOM, 97/43/EURATOM and 2003/122/EURATOM. This decree-law creates a new regulatory framework in Portugal, consolidating competencies on APA and IGAMAOT. Among its provisions, it sets up the system for managing radiological emergencies, including the information of the general public on applicable health protection measures and on actions to be taken in the case of a radiological emergency.

c) Technical Cooperation Protocol between APA, ANEPC, IST, of Portugal, and Consejo de Seguridad Nuclear, of Spain, on Radiological and Nuclear Emergencies and environmental radiological monitoring, signed in 30 of July 2015.

The license holder for a nuclear for radiological facility has prime responsibility for onsite emergency preparedness and response and cannot delegate or transfer it.

In general, the responsibilities on offsite emergency preparedness and response are shared between the operator, the competent civil protection authorities (at national, regional and municipality levels) and APA, on the framework of the National Civil Protection Emergency Planning. On these situations ANEPC is responsible for the international notification.

APA is responsible for the emergency preparedness and response whenever the impact on the workers, public and the environment does not need the intervention of the civil protection authorities. On these situations APA is responsible for the international notification. APA is the national competent authority and contact point for receiving the notification of emergency situations occurring abroad. APA also guarantees the international exchange of information in case of potential or real nuclear or radiological emergencies occurring in Portugal and affecting neighboring countries or abroad with potential impacts in Portugal.

The decision support tool RODOS (Real Time On-Line Decision Support for Nuclear Off-site management) is available at APA to support the emergency management.

APA is responsible for providing decision support to the civil protection authorities relating the radiological aspects of the emergency, namely: providing the relevant radiological data; proposing adequate actions and provide support on their implementation; coordination of the radiological monitoring actions; supporting the preparation of public information and proposing the declaration of the end of the emergency and its transition to an existing or planned exposure situation.

In the framework of nuclear or radiological emergencies ANEPC is responsible for: defining the information needed and promoting the elaboration or elaboration of and testing of offsite emergency plans; promoting the information to the public and articulating with the European Civil Protection Mechanism.

The operator shall have an onsite emergency plan complying with the requirements of the Decree-Law 108/2018. In an emergency situation, the operator should immediately notify APA and the entity responsible for the offsite emergency plan when applicable. The operator is responsible for the initial assessment of the emergency, identification of potential consequences and for taking mitigation actions.

The National Commission for Radiological Emergencies (CNER) has a general advisory role in the emergency planning and response. Under Decree-Law 108/2018, CNER is presided by ANPEC and includes representatives of APA, from the National Health Authority, from the Directorate-General for Energy and Geology, from the Ministry of Agriculture, from the National Institute of Medical Emergencies, from the National Institute for the Sea and Atmosphere, and from IST.

Moreover, CNER will join the Emergency Operations Centre of Civil Protection immediately, in an emergency situation that affects or may affect areas of the national territory, in order to monitor the situation and to collaborate in the preparation of the information to be communicated to the population.

According to Decree-Law 108/2018 all operators shall have an onsite emergency plan. Decree-Law 262/2012, amended by Decree-Law 135/2017 also includes specific provisions for onsite emergency plans for nuclear facilities. This plan is subject to approval by APA on the framework of the licensing procedure. Whenever offsite radiological impacts are foreseen, APA will forward the approved onsite emergency plan to ANEPC for evaluation on the need of having a complementary offsite emergency plan. The onsite emergency plans should be tested partially once a year and globally

once every three years. APA and when offsite emergency plans exists also the competent civil protection authorities, are notified 10 days before the testing is performed.

Whenever APA identifies potential offsite radiological impacts to a facility, ANEPC will decide on the need of an offsite emergency plan for this facility, taking into account the opinion of CNER. This plan will be prepared, revised and tested by the competent civil protection authorities in accordance with the specific regulation issued by the National Civil Protection Commission. This plan can include several installations if deemed more appropriate.

The population shall be informed about the consequences of a nuclear accident and the actions that should be adopted in case of such an event. This obligation results from Decree-Law 108/2018 and from EU Council Directive 2013/59/EURATOM. With respect to international emergencies, Portugal participates in the respective international activities of the Nuclear Energy Agency NEA (International Nuclear Emergency Exercises INEX), IAEA (such as Convention Exercises ConvEX) and EU.

Article 16(2) – Information of the public and neighboring States

Decree-Law 108/2018 sets out the requirements for information of the public in case of a radiological or nuclear emergency, transposing in full the requirements of Directive 2013/59/EURATOM. These provisions are complemented by provisions in Decree-Law 262/2012, amended by Decree-Law 135/2017.

Decree-Law 108/2018 distinguishes between information of the population potentially affected by an emergency and the information of the population actually affected by a radiological or nuclear emergency, including special provisions on information as soon as an effect is foreseen. The specific requirements of the information to be provided are in line with those of Directive 2013/59/EURATOM.

The competent civil protection authorities are responsible for providing this information, with collaboration of APA, health authorities and CNER.

In order to be able to give information according to the obligations under the Convention on Early Notification of a Nuclear Accident, of which Portugal is part, and also according to Council Decision no. 87/600/EURATOM, Portugal installed an

environmental monitoring network named RADNET, that is managed by APA. RADNET is a sparsely distributed network located in the Portuguese mainland (16 stations for measurement in air and 2 in water) and the autonomous regions (one station in Funchal, Madeira, and one in Ponta Delgada, Azores). Currently RADNET includes 14 stations measuring gamma dose rates (H*(10)) only, and 5 stations measuring gamma dose rates (H*(10)) and have spectrometric capabilities and increased sensitivity. Additionally, one more station installed in a vehicle and two stations that can be deployed anywhere. RADNET also includes two continuous water monitoring stations deployed in the Tagus and Douro international rivers, measuring the gamma dose rate (H*(10)) and having also spectrometric capabilities.

RADNET values are available to the public in the APA website and in EURDEP (European Radiological Data Exchange Platform).

APA also maintains the emergency communications with the EC and other EU Member States through the "European Community Urgent Radiological Information Exchange" ECURIE and the international community through the "Unified System for Information Exchange in Incidents and Emergencies" USIE from the IAEA.

Article 16(3) – Emergency preparedness for Contracting Parties without nuclear installations

Portugal has no nuclear installations as defined in the CNS. The nuclear installation located nearest to the Portuguese Border is the Almaraz Power Plant in Spain, at a distance of about 100 km from the border. There are no nuclear installations in the immediate vicinity of the border.

Decree 36/80, of May 30th, ratifies a Portugal-Spain agreement specifically covering the matter concerning nuclear installations near the border between the two countries – in a strictly legal approach, however, it should be noted that there are no installations presently that fall under that category and to which, therefore, this agreement could be applied.

The Portugal-Spain agreement reproduces essentially the obligations deriving from the Early Notification Convention.

In 30 of July of 2015, a Bilateral Agreement between the CSN-Consejo Seguridad Nuclear (Spain) and ANPC, APA and IST was signed. This Bilateral Agreement establishes that: all efforts will be done by the authorities to develop mechanisms for fast communication in case of an accident or incident where potential trans-boundary effects may take place.

D. Annexes

1. List of nuclear installations

Portugal does not have any nuclear installations under the CNS. However, there is a research reactor, the Portuguese Research Reactor "RPI", currently in transition to decommissioning, and without any nuclear fuel or spent fuel.

2. Data on nuclear installations

Portugal does not have any nuclear installations under the CNS. The existing research reactor, the RPI, is a 1MW pool type Material Testing research reactor. On 21 January 1957, the Portuguese Government gave green light for the acquisition of this equipment and the reactor went operational on 25 April 1961. In the period from 1961 up to now the reactor was almost always operational, with some reduced periods of shutdown. The reactor was formally licensed in 2005 and was converted from HEU to LEU in 2007. The RPI facility is integrated in the *Campus* Tecnológico Nuclear of Instituto Superior Técnico that is the Engineering School that is part of the University of Lisbon. No incident has ever been detected and reported.

In early 2019, all nuclear fuel and spent fuel was removed from the RPI and shipped to the United States of America under a bilateral agreement. The operator will have to prepare a decommissioning plan and apply for a license for that phase of the facility's lifecycle.

3. Reference to national laws and regulation

- Decree-Law 227/2008
- Decree-Law 198/2009
- Decree-Law 156/2013
- Decree-Law 30/2012, amended by Decree-Law 135/2017
- Decree-Law 262/2012, amended by Decree-Law 135/2017
- Ministerial Order 195/2015
- Resolution from the Council of Ministers 122/2017

- Decree-Law 108/2018

4. References to international review missions

Portugal has submitted a request to the IAEA to host an Integrated Regulatory Review Service (IRRS) mission. This mission is scheduled to take place in the first half of 2020, with preparations being under way.

5. Related Data

- Diplomatic Conference to adopt CNS: 14-17 June 1994
- Signature by Portugal: 3 October 1994
- National Ratification by Portugal: 19 March 1998
- Deposit of Ratification 20 May 1998
- Entry into force in Portugal 18 August 1998
- Accession of EURATOM 31 January 2000
- Entry into force for EURATOM 30 April 2000
- 1st organizational meeting: 29-30 September 1998
- 1st Review Meeting: 12-23 April 1999
- 2nd organizational meeting: 25-26 September 2001
- 2nd Review Meeting: 15-26 April 2002
- 3rd organizational meeting: 28-30 September 2004
- 3rd Review Meeting: 11-22 April 2005
- 4th organizational meeting: 24-26 September 2007
- 5th organizational meeting: 29-30 September 2009
- 5th Review Meeting: 4-15 April 2011
- 6th organizational meeting: 30-31 August 2012
- 6th Review Meeting: 24 March- 4 April 2014
- 7th Revew Meeting: 27 March – 7 April 2017
- 8th organizational meeting: 17 October 2018
- 8th Turnover meeting: 19 March 2019