



Convention on Nuclear Safety

Sixth Review Meeting

(24 March to 4 April 2014)

**Answers to the Questions of Contracting Parties
on the National Report submitted by Greece**

Q.No	Country	Article	Ref. in National Report
1	Austria	General	General

Question/ Comment Are you going to make your CNS reports and the questions and answers to them publicly available? If not, why not?
Do you publish IAEA Mission Reports?

Answer Greece CNS reports are systematically published at IAEA website <http://www-ns.iaea.org/conventions/nuclear-safety.asp#1>.
GAEC also publishes the CNS national reports, along with the Questions and Answers file, at its website <http://www.eeae.gr>.
The same practice has been followed this year; at the moment only the national report is available; the Q&A file will be uploaded upon the completion of the Review Meeting.
Regarding IAEA mission reports, the transparency principle is also applicable. A recent example is the uploading, at GAEC website, of the IRRS Mission Report, the outcome of the IRRS mission conducted in Greece in 2012.
http://www.eeae.gr/en/index.php?fvar=html/files/_irrs_mission_report

Q.No	Country	Article	Ref. in National Report
2	Austria	General	General

Question/ Comment Is the safety significance of deviations from applicable current safety standards and internationally recognised good practice compiled for each nuclear installation? If so, in which intervals and are these compilations accessible to the general public?

Answer In Greece there are no nuclear installations, as defined in the Convention. Regarding the Greek Research Reactor (GRR-1), new regulation for the nuclear safety of research reactors came into force in 2012, according to which the licensee shall periodically assess the safety of the installation. At present, GRR-1 is in extended shutdown according to its application for the relevant license in November 2013. GAEC has asked for additional information, in order to proceed to the review of the application. Review and assessment of the safety of the installation will be based on the abovementioned nuclear safety regulations and on applicable IAEA standards, taking into account the reduced risks of the installation in its current phase. It is provided by the regulations that the duration of an extended shutdown license shall not exceed 5 years; therefore, this is the maximum permitted interval for the re-evaluation of the safety of GRR-1. Safety significance of deviations or events are evaluated when they occur and are reported to GAEC or when are identified during inspections.
GAEC publishes on its website the events occurring in installations or practices involving ionizing radiation. This applies also to the GRR-1.

Q.No	Country	Article	Ref. in National Report
3	Austria	General	General

Question/ Comment Is there any obligation for the licence holders to inform/consult the general public or

Comment stakeholders in the vicinity of a nuclear installations on issues related to nuclear safety?

Answer In Greece there are no nuclear installations, as defined in the Convention. As concerns the GRR-1, there are no specific obligations for the license holder to inform/consult the general public or stakeholders in the vicinity of the installation. GAEC, however, is obliged to provide information to the public in the field of its competence, as provided in the Presidential Decree 60/3-5-2012, transposing the EC Nuclear Safety Directive in the national legislation and this will be realized by publishing, on its website, the safety evaluation report and the license for the GRR-1.

Q.No	Country	Article	Ref. in National Report
4	Austria	General	General

Question/ Comment To which extent does the Regulatory Body currently publish safety relevant licenses, decisions, assessments, etc.? Are there intentions to modify current practice?
Is the general public currently involved in the decision making of the Regulatory Body relevant to nuclear safety? Are there intentions to modify current practice?

Answer The general public is not involved in the decision making relevant to nuclear safety. However, newly established platforms and initiatives taken by the Greek Government (e.g. <http://diavgeia.gov.gr/>, <http://www.opengov.gr>) aim at the participation of the general public in the decision making procedures applied in the public sector. These initiatives may modify the current practice in the field of nuclear safety too. Regarding publication of safety relevant document, see also the answer to question 3.

Q.No	Country	Article	Ref. in National Report
5	United States of America	General	Appendix D

Question/ Comment Page 25 of the National Report; IRRS Report IAEA-NS-IRRS-2012/02
According to Appendix V of the IRRS Report, there are recommendations for improvement. GAEC states that it has taken steps for the implementation of the action plan. Please briefly describe the action plan and its implementation. [Particularly address steps to implement recommendations R4, establish and maintain a national policy and strategy for radioactive waste management; R19, preparation of updated Radiation Protection Regulations to bring them in line with the current IAEA Safety Requirements; and R28, ensure clear separation of GAEC regulatory functions from advisory actions given to the operator for existing exposure situations and remedial actions.]

Answer The action plan was drafted by GAEC prior to the IRRS Mission, as an outcome of the self-assessment process. Since the findings of the mission almost coincided with the self assessment findings, the action plan was slightly altered. After the mission 3 committees were formed with the aim of introducing proposal to GAEC Board on future actions, in order to implement the IRRS recommendations. The

implementation has already started.

The actions have been categorized as short, medium and long term.

In particular:

R4: Following the transposition of the Council Directive 2011/70/Euratom of 19 July 2011 establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste (Presidential Decree No 122/12.08.2013) a committee has been formed with the aim of drafting new pieces of regulation and the national plan (deadline August 2014). At the same time a dialogue initiated with other governmental bodies in order to elaborate the policy, strategy and the national plan.

R19: The national framework for radiation protection will be reviewed and aligned with IAEA BSS, during the transposition of the EC BSS (2013/59/Euratom). Drafting committees have already been appointed and started working.

R28: More formal communication channels are followed.

Q.No	Country	Article	Ref. in National Report
6	Austria	Article 6	6, p6

Question/ Comment Could you share with us what are the unresolved problems and difficulties concerning operational safety that caused the significant delay in the preparation of the core conversion to LEU at the GRR-1? What is the status of licensing process and lessons learned from it up to now? What are the present plans to restart the reactor?

Answer The GRR-1 has never operated with an LEU core. Its operation ceased before the conversion, following the plans, at that time, for modification and refurbishment of the installation. However, these plans have not yet completed, and GRR-1 has applied for an extended shutdown license, as obliged by the new regulations. The reason for the delay is not related to operational safety issues. The fully LEU core had been evaluated by the licensee at that time, and found of the same level of safety with the mixed one. Plans for eventual restarting of the reactor's operation have not been communicated to GAEC yet, although in the application for the extended shutdown license, the operator reserves the possibility to reactivate the modernization and refurbishment project. Taking into account this possibility, GAEC requested from GRR-1, as additional information to the initial application for the extended shutdown license, to provide the measures and arrangements for maintaining adequate human resources and the knowledge for the installation.

Q.No	Country	Article	Ref. in National Report
7	Austria	Article 6	6, p6

Question/ Comment Having in mind the lessons learned from Fukushima accidents could you share with us which measures were implemented or planned to improve the long term cooling of spent fuel in case of loss of offsite power or cooling water?

Answer The decay heat, after 10 years the reactor has been shutdown, is not enough to damage the fuel. Therefore, there are no long term cooling requirements for the irradiated LEU fuel stored in the GRR-1.

Q.No	Country	Article	Ref. in National Report
8	Germany	Article 6	p. 6

Question/ Comment After nearly 10 years of shutdown the GRR-1 is going to apply for the extended shutdown license. Is there a perspective for placing the reactor back into operation?

Answer Plans regarding the future of the reactor have not been communicated to GAEC, although in the application for the extended shutdown license, the operator reserves the possibility to reactivate the modernization and refurbishment project. Taking into account this possibility, GAEC requested from GRR-1, as additional information to the initial application for the extended shutdown license, to provide the measures and arrangements for maintaining adequate human resources and the knowledge for the installation.

Q.No	Country	Article	Ref. in National Report
9	Austria	Article 8.1	8, p13

Question/ Comment Worldwide experienced nuclear workers are ageing and already retired. The loss of the first generation of nuclear workers is a big concern all over the world, even in a number of countries with operating NPPs. It is reported that in many countries universities cannot produce the needed number of engineers and physicists to replace the ageing personnel. Could Greece share with us whether there are problems to replace the ageing nuclear staff in GAEC? Could you provide us with information on the distribution of the expert's age?

Answer In GAEC, the task of nuclear safety is primarily assigned to three staff persons, one full-time and two part-time. The full time employee is 36 years old, while the two-part time employees are about 50 and 70 years old. GAEC provides continuous training of the younger employee through participation in IAEA and EURATOM events (training courses, workshops etc). Last summer an "on the job-training", consisted of a two-month visit at the US NRC was also completed. The overlap with the oldest staff ensures the preservation of the knowledge for the GRR-1.

Q.No	Country	Article	Ref. in National Report
10	Spain	Article 8.1	11

Question/ Comment Has your regulation established, for the seven members of the GAEC Board, any restriction on incompetence due to the likelihood of bias when discharging their duties in the Board or after ceasing their position in it?

Answer In the current legislative framework the provision for the Board members is that they shall be experts in specific fields and they are appointed for three years. Additional provisions have been proposed by GAEC and are to be included in the revision of the framework.

Q.No	Country	Article	Ref. in National Report
11	Spain	Article 8.2	10

Question/ Could you further elaborate which kind of supervision makes the Secretariat for
Comment Research and Technology over GAEC?

Answer In Greece, the common practice is that the responsibilities of Ministries are allocated to General Secretariats to which specific responsibilities are assigned. In the case of Ministry of Education and Religious Affairs, the General Secretariat for Research and Technology (GSRT) is entitled with the responsibility to coordinate research-related issues and supervise research and technological bodies.

GAEC establishment Law states that the jurisdiction for GAEC Board appointment is given to the competent Minister, at present the Minister of Education and Religious Affairs.

GAEC is a decentralized public organization, with no supervision by the GSRT on its regulatory decisions. The supervision of the GSRT concerns only the legitimacy of administrative or financial aspects of GAEC acts and not the expediency of these acts.

Q.No 12	Country France	Article Article 10	Ref. in National Report Section Radiation Protection, page 15
------------	-------------------	-----------------------	---

Question/ According to the Radiation Protection Regulations, each activity with radioactive
Comment material exceeding the exemption levels or with equipment producing radiation needs a license : GAEC should improve the implementation of a graded approach in the authorization process.

Answer This issue was pointed out by GAEC during the phase of self assessment for the IRRS mission and as such it was included in the proposed action plan. During the mission, the reviewers formulated a relevant recommendation and GAEC will deal with it during the revision of the radiation protection regulations, in the context of the transposition of the new EC BSS Directive.

Q.No 13	Country France	Article Article 10	Ref. in National Report Section Radiation Protection, page 15
------------	-------------------	-----------------------	---

Question/ Why, for the medical applications, the licenses are not issued by GAEC, while,
Comment according to its statutory role, GAEC responsibilities include licensing procedures (see Article 8, section "Regulatory activities", page 11) ?

Answer The license process requires a series of documents (eg certificate from the fire brigade) that are outside GAEC competence.
GAEC issues the so-called "Certificate of compliance from radiation protection point of view".

Q.No 14	Country Austria	Article Article 11.1	Ref. in National Report 11, p17
------------	--------------------	-------------------------	------------------------------------

Question/ Have there been problems with financing of GAEC from the state budget during the

Comment recent years? If yes, are they solved?

Answer No, in general terms, GAEC's activities have not been directly affected by the current financial crisis. The funding through the Government budget remains steady and is used for the payment of the country's annual contribution to IAEA, and for a part of personnel and operational costs. Revenues from provision of services, fees and research projects are also used for supporting the operation of GAEC. Additionally to that, a declining trend in GAEC expenses has been observed the last three years, in line with the general financial reform.

Q.No	Country	Article	Ref. in National Report
15	Austria	Article 11.1	11, p17

Question/ Comment Could Greece explain what the principles for financial provisions are during the period of operation, for decommissioning and management of spent fuel and radioactive waste from research reactor and sub-critical assemblies? What is the projected value of these provisions and what is the amount of money accumulated up to now?

Answer Financial aspects of radioactive waste management are not included in the safety documentation of the GRR-1. At the moment Greece is on the way for the preparation of its national programme for the management of radioactive waste in the context of implementation of the EC Directive 2011/70/Euratom establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste. In the Presidential Decree No 122/12.08.2013, which transposes the EC Directive into the Greek legislative system, it is clearly stated that financial cost estimation must be taken into account for the waste streams in Greece and specific funding mechanisms must be determined. So far, the cost of the operation, including the management of the radioactive waste of the GRR-1, has been undertaken by the NCSR "Demokritos" which is a public organization. With regard to the spent fuel of the GRR-1, at the moment there is no spent fuel in the reactor, since all was shipped back to the US in 2005, according to an existing agreement with the US DOE. However, in the above mentioned Presidential Decree, the principles of the national policy are included; one of which precludes the import of nuclear fuel in Greece, without an agreement with the supplier to take it back for management up to end. Decommissioning plans have not been submitted to GAEC so far, however, their preparation, including, financial aspects will be made as part of the before mentioned radioactive waste management national program. Regarding the fuel of the subcritical assemblies, it is not considered as spent since it is nearly fresh.

Q.No	Country	Article	Ref. in National Report
16	Germany	Article 12	p. 18

Question/ Comment It is said that with regard to the GRR-1, human factors are also required by the regulation to be taken into account in all stages of its lifetime, including the extended shutdown phase.

How is it accounted for? Is there a plan for implementation of special measures? How is the efficiency of given measures controlled?

Answer Human factors shall be taken into account during the lifecycle of research reactors, as explicitly provided in Safety of Research Reactor, Safety Requirements, NS-R-4, IAEA, 2005, which was used as the basis for the development of the recent regulations for the nuclear safety of research reactors. Although human factors is an aspect applicable mostly in the design phase, there are cases in the extended shutdown phase where human factors should also be considered, as for example personnel qualification and training, physical and health condition and shifts during some works in the facility or during maintenance and surveillance. In addition, in particular regarding training and qualification of personnel, GAEC requested the operator to provide the measures and arrangements in place to ensure the preservation of knowledge in the facility and adequate staff, in view of reserving the possibility for re-operation in the future, as mentioned by the operator in the application for the extended shutdown license.

There are no requirements for special measures or qualitative indicators for assessing the performance with regard to human factors and no intention to develop, at least for the current phase of the reactor. Human factors will be kept in mind during regulatory inspections or considered in case of post-event analysis by the operator and/or by GAEC, where the role of the human error and performance shall be examined.

Q.No	Country	Article	Ref. in National Report
17	Germany	Article 14.1	p. 19

Question/ Comment It is said that as a part of the extended shutdown licensing procedure, among others an applicable safety analysis report shall be submitted to GAEC (Greek Atomic Energy Commission).

What is the scope of this report? Does it cover similar aspects and details as the preliminary safety analysis report of the construction and operation procedure, including probabilistic and deterministic analysis methods?

Answer The contents of the application for an extended shutdown license are provided in Article 17 of the regulation for nuclear safety of nuclear research reactors (Ministerial Decision P/112/305/26.10.2012), according to which the application shall include:

- Identification of the applicant
- Arrangements and measures for ensuring sub-criticality if the core is not unloaded
- Arrangements and measures for disconnection, dismantling and maintenance of the systems and devices that are put out of operation
- Safety Analysis Report (SAR) to the degree applicable
- Arrangements and measures for ensuring the required human and financial resources and for maintaining the knowledge for the installation.
- Inspection and surveillance system
- Updated physical protection and nuclear materials safeguards system.

With regard to the SAR, the following parts have been requested:

- Radiation Protection

- Conduct of operations
- Accident Analysis: The applicant is requested to provide an analysis of accidents, if any, applied to the current state of the installation that could result to damage of the stored fuel and release of radioactivity and the associated consequences to the workers and the public.
- Technical Specifications
- Updated emergency plan

Q.No	Country	Article	Ref. in National Report
18	South Africa	Article 14.1	14, 18

Question/ Comment It is stated that "comprehensive and systematic safety assessments are carried out before the construction and commissioning of a nuclear installation and throughout its life." The convention refers to the following operational stages: design, manufacturing, construction, commissioning and operations. For completeness safe the decommissioning phase could be added. How is the phases design, manufacturing, operations and decommissioning managed with regards to the safety assessment?

Answer GAEC is the regulatory authority with the duty to assess the safety of radiation involving practices and installations throughout their life. This is accomplished by means of initial licensing (design, manufacturing, operation) and review of the safety or radiation protection documentation and an inspection programme exercised during the whole lifecycle of a practice or an installation. In Greece there are no nuclear installations as defined in the Convention. Regarding the Greek Research Reactor (GRR-1) the licensing process, as defined in the regulations (Ministerial Decision P/112/305/26.10.2012), follows the various stages of the research reactor lifetime. In particular, there are separate licenses for construction, commissioning, operation, decommissioning and extended shutdown. For all these licenses to be granted, safety documentation shall be submitted to GAEC by the licensee, which shall be reviewed by GAEC.

Q.No	Country	Article	Ref. in National Report
19	South Africa	Article 14.1	14, 18

Question/ Comment It is stated that "verification by analysis, surveillance, testing and inspection is carried out to ensure that the physical state and the operation of a nuclear installation continue to be in accordance with its design, applicable national safety requirements, and operational limits and condition"." What is the procedure followed when authorised facilities do not comply with conditions of authorisation?

Answer The procedure to be followed is as such:

1. Suspension of operation license
2. Follow-up inspections to verify that the licensee has taken the necessary corrective measures.
3. In case of continuation of non-compliance, GAEC proceeds to report or file charges before State's Prosecutor.

Q.No 20	Country South Africa	Article Article 14.1	Ref. in National Report 14, 18
------------	-------------------------	-------------------------	-----------------------------------

Question/ Comment Does this mean that GAec performs this safety assessment or does GAEC review the safety assessment for compliance with primary safety criteria? Does GAEC have the expertise or do they make use of Technical Support Organisations?

Answer GAEC is the regulatory authority, therefore its role is to review the safety assessment performed by the applicants. Up to now, GAEC performed the review of the safety assessment reports submitted. If considered necessary, GAEC has the possibility to seek expertise from other organizations in Greece or internationally, if needed, as provided in Article 23 of the Ministerial Decision P/112/305/26.10.2012.

Q.No 21	Country South Africa	Article Article 14.1	Ref. in National Report 14, 18
------------	-------------------------	-------------------------	-----------------------------------

Question/ Comment It is stated that "The last years, visits and in particular inspections of the integrity of the fuel storage pool, as well as measurements of the pool water wuality have been performed by GAEC."What is the result of these verification activities?

Answer The quality of the water in the fuel storage pool is maintained by the operator by means of demineralization and measurement (PH, conductivity) in a regular basis. Radioactivity of the water is also measured by the operator. It is also independently verified by radioactivity measurements performed by GAEC and visual observations of the state of the fuel plates and the pool. No degradation of the water quality or the fuel plates integrity has been detected.

Q.No 22	Country Austria	Article Article 15	Ref. in National Report 15, p19
------------	--------------------	-----------------------	------------------------------------

Question/ Comment Could you share with us whether Greece accomplished mutual emergency exercises with Bulgaria in the case of a severe accident at Kozloduy NPP? If yes, were public and media involved and how? What were the lessons learned?

Answer Greece and Bulgaria have established and maintain a long-term cooperation in radiation protection, especially regarding emergency management arrangements. The bilateral agreement (signed in 1991) is currently under revision. A joint emergency exercise has not been organized yet; however, it is considered in our future plans and we will be happy to share our experience upon its completion.

Q.No 23	Country Lithuania	Article Article 15	Ref. in National Report Page 19
------------	----------------------	-----------------------	------------------------------------

Question/ Comment Could you please provide information regarding the annual collective dose for the critical group of population?

Answer GAEC keeps the National Dose register and performs statistical analysis of the occupational doses every year. Moreover, when asked, GAEC communicates the

dosimetry results and statistics to UNSCEAR, IAEA, EU etc. As far as the collective dose of the occupationally exposed personnel is concerned it was 7.71 manSv (including the personnel of the research reactor, without taking into account workplace monitoring and aircrew) for the year 2012.

A national project is in progress in order to reevaluate the collective dose of the occupationally exposed workers and to calculate for the first time the collective dose of the population.

Q.No	Country	Article	Ref. in National Report
24	South Africa	Article 15	15, 104

Question/ Comment Could you please provide more detail on your dose limits, dose constraints and reference levels as applicable?

Answer A. Dose Limits

According to the current radiation protection regulations the occupational exposure of any worker shall be so controlled that the following limits be not exceeded:

- The limit on effective dose for exposed workers shall be 20 mSv in any single year and 100 mSv in a consecutive five-year period.
- In exceptional cases, the effective dose during any single year may amount to 50 mSv, provided that in the preceding five consecutive years, including the current year, the effective dose had not exceeded 100 mSv. The period of five consecutive years shall start to run as from the year 2000.
- As soon as a pregnant woman declares her condition, measures must be taken to ensure that the woman's exposure in the context of her employment shall be such that the equivalent dose to the child during the period between the notification of pregnancy and childbirth shall be as low as reasonably achievable and that it shall not exceed 1 mSv under any circumstances.
- The limit on equivalent dose or the lens of the eye shall be 150 mSv in a year.
- The limit on equivalent dose for the skin shall be 500 mSv in a year. This limit shall apply to the dose averaged over any area of 1 cm², regardless of the skin area exposed.
- The limit on equivalent dose for the hands, forearms, feet and ankles shall be 500 mSv in a year.
- The dose limits for apprentices aged 18 years or over and students aged 18 years or over who, in the course of their studies, are obliged to use sources, shall be the same as the dose limits for exposed workers
- The limit on effective dose for apprentices aged between 16 and 18 and for students aged between 16 and 18 years who, in the course of their studies, are obliged to use sources, shall be 6 mSv per year.

Without prejudice to the above limits:

- the limit on equivalent dose for the lens of the eye shall be 50 mSv in a year;
- the limit on equivalent dose for the skin shall be 150 mSv in a year. This limit shall apply to the dose averaged over any area of 1 cm², regardless of the skin area exposed;
- the limit on equivalent dose for the hands, forearms, feet and ankles shall be 150 mSv in a year.

- The dose limits for apprentices and students aged 16 years and over who are not subject to the provisions of paragraphs (a) and (b) and apprentices and students aged under 16 shall be the same as the dose limits for members of the public.

Exposure of workers at the workplace due to the presence of natural radiation sources may not exceed 20 mSv in a year.

Specifically, as regards exposure due to the presence of radon and its daughters at the workplace, the following rules shall apply:

- Workplaces at which the average annual total radon concentration (corresponding to an annual working time of 2000 hours) is less than 400 Bq/m³ shall be exempted from further control and radiation protection measures.
- In workplaces at which the average annual total radon concentration (corresponding to an annual working time of 2000 hours) is greater than 400 Bq/m³ and less than 1000 Bq/m³, the possibility of reducing the above concentrations using appropriate technologies shall be investigated. These workplaces shall be defined as supervised areas and the radiation protection measures taken must be approved by GAEC.
- Workplaces at which the average annual total concentration of radon (corresponding to an annual working time of 2000 hours) is greater than 1000 Bq/m³ and less than 3000 Bq/m³ shall be defined as controlled areas and the practices in question must be authorized by GAEC; the radiation protection measures taken must be approved by GAEC.

Airline companies shall plan the routes of their flight personnel so as to reduce exposure of the most exposed personnel; exposure may not exceed 6 mSv per person in a year.

The following limits shall apply to members of the public (these limits do not include doses resulting from medical applications, natural radiation or domestic radon).

Whole body exposure: the limit for effective dose shall be 1 mSv in a year.

Partial exposure: for the case of partial exposure of the body:

- The limit for effective dose to be used in practice to estimate internal exposure shall be 1 mSv in a year.
- Besides, the limit on equivalent dose for the lens of the eye shall be 15 mSv in a year, while the limit on the equivalent dose for the skin shall be 50 mSv in a year averaged over any 1 cm² area of skin, regardless of the area exposed.

B. Dose Constraints

For each healthy person who participates in the trial, dose constraints shall apply corresponding to 1 mSv per year. Values shall increase to 5 mSv provided that during the last five years (including current year), the total dose shall not exceed 5 mSv.

In the case of members of the family or close acquaintances of patients who are treated with I-131 the dose constraints in the following Table shall apply:

TABLE

Category of individuals Dose constraints

Minors (including embryos) 1 mSv

Adults up to 60 3 mSv

Adults over 60 15 mSv

The above dose constraints shall be deemed to relate to one or at most two cases of the abovementioned exposure during the life span of the exposed individuals. In the case of radiodiagnostic and radiotherapeutic examinations or treatments, the dose constraint shall be 3 mSv per examination or treatment. The annual dose constraint for members of the public who are exposed to radiation as a result of the presence of patients who have received radioisotopes shall be 0.3 mSv. Moreover, the dose constraints or committed doses received during specially authorized exposures shall be determined by GAEC and may not in any year exceed twice the annual dose limits, and, in a lifetime, five times those dose limits.

C.Reference levels

National Diagnostic Reference Levels (DRLs) for the most critical radiodiagnostic examinations (including nuclear medicine) have been determined.

Q.No	Country	Article	Ref. in National Report
25	South Africa	Article 15	15, 104

Question/ What is the position on protection of the environment non-human species?
Comment

Answer Greece aligns with the EU approach, as reflected in the new BSS Directive (EC Directive 2013/59/2018).

Q.No	Country	Article	Ref. in National Report
26	South Africa	Article 15	15, 104

Question/ What is the position on the new proposed dose limits for the lens of the eye, and how
Comment will you manage these changes?

Answer Greece will bring into force regulations and all administrative provisions to comply with the European Directive 2013/59 by 2018. Meanwhile pilot studies are performed in order to identify practices where the eye lens doses are close to the proposed limit. The studies are oriented in the medical sector and more specifically at the interventional radiology and cardiology sector. Eye lens dose measurements are performed to record the dose levels and correlate them with the respective whole body doses. Depending on the results of the measurement and where necessary stricter radiation protection means will be mandatory during the licensing process of the facilities. Training and education of the involved staff will be part of the roadmap for the management of the eye lens dose limit change.

Q.No	Country	Article	Ref. in National Report
27	South Africa	Article 15	15, 104

Question/ How is gaseous and liquid effluent releases to the environment managed?
Comment

Answer In the Radiation Protection Regulations there is the general provision: “The dose constraint (in effective dose) for the members of the public resulting from all the discharges of radioactive substances in the environment is set to 10 mSv/y”. Additionally, in the Radiation Protection Regulations there are provisions for the liquid discharges. In particular, there are a series of special provisions in case that the discharge is performed in the public sewage system. Radioactivity quantities per radionuclide are given in order to calculate the specific limits of daily discharges. GAEC has issued a circular giving special instructions for the discharges in case of hospitals with nuclear medicine therapeutic wards, based on the dose criterion of 10 mSv/y for the public as well as a dose constraint of 100 mSv/y for workers working for the sewage management system. Similar provisions for daily gaseous discharges are included in the Radiation Protection Regulations.

Q.No	Country	Article	Ref. in National Report
28	United States of America	Article 16.1	pg 23

Question/ Comment In response to the Fukushima accident, the emergency plan was tested with success; however, two issues for further improvement were identified: 1) the need for additional GAEC staff training on nuclear technology and 2) staff redundancy. Please describe the plans for completing these improvements.

Answer Regarding staff redundancy, GAEC assigned an additional person with the task of the in-depth use of the operational models for atmospheric dispersion and dose estimation. This person has been already trained and participates in all exercises organized so far (e.g. during IAEA exercises). Other members of GAEC staff are trained for performing quick estimation in case of an emergency. As concerns nuclear technology and safety, a GAEC employee had an on-the-job training visit of two months at the US NRC, regarding licensing and inspection of research reactors. During the visit the opportunity was given for better understanding of research reactors technology and accidents and the applicable practice and regulatory requirements in the US. As concerns nuclear power plants, the work of the staff involved with nuclear safety of nuclear power plants and accidents concerns mainly the transport and dispersion of radioactivity, through the atmosphere and the estimation of the associated doses to the Greek population. Additionally, GAEC participated in the review process of the European stress tests and also tries to enhance its nuclear safety expertise by participating in relevant to nuclear safety projects of the IAEA Technical Cooperation Programme.

Q.No	Country	Article	Ref. in National Report
29	Austria	Article 16.3	16, p23

Question/ Comment According to the 2013 National Report in response to Fukushima accidents some issues for further improvement have been identified, such as: need for additional

Comment GAEC staff training on nuclear technology, like severe accident phenomenology and staff redundancy.

Could you share with us which measures Greece have been taken or will take to achieve these goals and in which time schedule?

Answer Regarding staff redundancy, GAEC assigned an additional person with the task of the in-depth use of the operational models for atmospheric dispersion and dose estimation. This person has been already trained and participates in all exercises organized so far (e.g. during IAEA exercises).

Other members of GAEC staff are trained for performing quick estimation in case of an emergency.

As concerns nuclear technology and safety, a GAEC employee had an on-the-job training visit of two months at the US NRC, regarding licensing and inspection of research reactors. During the visit the opportunity was given for better understanding of research reactors technology and accidents and the applicable practice and regulatory requirements in the US.

As concerns nuclear power plants, the work of the staff involved with nuclear safety of nuclear power plants and accidents concerns mainly the transport and dispersion of radioactivity, through the atmosphere and the estimation of the associated doses to the Greek population. Additionally, GAEC participated in the review process of the European stress tests and also tries to enhance its nuclear safety expertise by participating in relevant to nuclear safety projects of the IAEA Technical Cooperation Programme.

Q.No	Country	Article	Ref. in National Report
30	Bulgaria	Article 16.3	p. 23

Question/ Which institutions provide prior information to acquaint the public with radiation risks and appropriate action in the event of a nuclear or radiological emergency?
Comment

Answer The organization responsible for providing information to the public prior to a radiation emergency is the Greek Atomic Energy Commission. Its role under this scope is described in the Ministerial Decision 2739/94, entitled "Regulation for public information in the event of a radiological emergency", transposing the respective EC Directive 89/618/Euratom.