

Joint Convention
 Questions Posted To Argentina in 2012

Q.No	Country	Article	Ref. in National Report
1	Czech Republic	General	B4.1/26

Question/ Comment From your definition of individual categories of radioactive waste (exempted waste) follows that values of the clearance, exemption and exclusion are the same. Can you explain why?

Answer The radiological criterion used to obtain the generic exemption levels and the generic clearance levels is a the same, but the numerical values are different. This is because scenarios and parameters used to derive clearance values [IAEA-Safety Reports N°44] are not the same from those used to derive exemption values [EU RP-65]. Generic clearance levels are usually more restrictive than exemption values and are only considered in terms of activity concentration. There are not any exclusion values in our legislation.

Q.No	Country	Article	Ref. in National Report
2	Czech Republic	General	H4.1.

Question/ Comment What technological procedure do you assume for conditioning of ion exchangers before their disposal?

Answer At the moment, the country is studying and developing different strategies for the treatment and conditioning of spent ion exchangers, such as cementation and drying. Meanwhile they are stored in the NPPs, except those coming from RA-3 research reactor operation which are stored in AGE.

Q.No	Country	Article	Ref. in National Report
3	Czech Republic	General	H5.

Question/ Comment If you do not have a disposal facility for LLW and ILW radioactive waste yet what acceptance criteria for disposal do you consider for conditioned waste?

Answer The current efforts are focused on the radiochemical characterization of the radioactive wastes generated in the country. Due to practical reasons, it is foreseen to condition some waste in certain cases and their acceptance would be reassessed at the time the final disposal facility has been defined.

Q.No	Country	Article	Ref. in National Report
4	Czech Republic	General	E2

Question/ Comment Can you clear a difference between the regulation of radioactive waste and tailing ponds and pits after mining and milling of uranium ores, if you have some?

Answer The Argentine regulation has a general standard for the management of all types of Radioactive Waste, which is AR 10.12.1 “Radioactive Waste Management”. However there is another standard, AR 2.12.1 “Radiological Safety criteria for the management of radioactive waste from mining and milling facilities”, whereby specific criteria for those wastes are established. The more relevant specific criterion that differs from the regulation of radioactive waste and tailing ponds and pits after mining and milling of uranium ores is the addition of intervention criteria for human intrusion: below 3 mSv/y (intervention not

justified); up to 30 mSv/y (intervention generally justified) and, between those values, justification on a case by case basis.

Q.No	Country	Article	Ref. in National Report
5	Czech Republic	General	F19/79

Question/ Comment Could you more specify the system to keep the public informed?

Answer Diffusion activities are oriented primarily towards explaining a nuclear accident, and what actions are in force to protect local population and to minimize radiological risks. The Nuclear Regulatory Authority together with the facility operator and the local civil defense have implemented training programmes for people and organizations involved in the area covered by the emergency plan. The training is oriented towards the effective implementation of protective actions and is carried out by the Nuclear Regulatory Authority.

An important point for the preparation of the population is the diffusion of information in the schools surrounding the NPPs so that the students know exactly what they should do in case they receive a warning from the nuclear emergency command. According to the group age of the students and their level of understanding, there are four different types of classes defined.

Similarly diffusion activities on protective actions were carried out with other sectors of the public. Said activities included talks, discussions and explanation of doubts generated during the open meetings offered by the local civil defence, the nuclear power plant and the Nuclear Regulatory Authority.

The contents of these activities explain how the electricity is generated through a nuclear power plant, showing the advantages and technological difficulties involved in its production. Also this activity explains how a nuclear accident is developed, which impact it had on the public and why these protective actions minimize the impact on the population and environment.

All these tasks to prepare the public are conducted in a non-technical jargon understandable for all kinds of audience in order to improve the implementation of the protective actions.

Q.No	Country	Article	Ref. in National Report
6	France	General	K

Question/ Comment Section K of the next report of Argentina should, as much as possible, be more detailed regarding the objectives at medium or long terms associated with future activities.

Answer It will be considered for the drafting of the next reports.

Q.No	Country	Article	Ref. in National Report
7	Ukraine	General	p. 1

Question/ Comment The National Report of Argentina reflects in comprehensive manner the implementation of obligations in connection with the Joint Convention. It should be mentioned that since the 1st Review Meeting under the Joint Convention the

progress of Argentina in implementation of all JC articles is obvious. The most important and significant factor is the increase of resources of the regulatory authority of Argentina as well as the increase of the staff number through enrollment of young qualified experts.

Answer We have had a sounder Institutional support during the last years and this is probably the reason for a better performance. All the same, we find this comment quite rewarding.

Q.No	Country	Article	Ref. in National Report
8	United Kingdom	General	Section A.2, Page A-3

Question/ Comment In the paragraph describing CNEA’s activities, the report refers to “production of heavy water”.

Could Argentina state whether it is still producing heavy water? if not, when was the production of heavy water halted?

What is the current operational status of the heavy water production facilities? (e.g. care and maintenance, operating, decommissioning)

Answer The production of heavy water in Argentina has not been halted. In Argentina, there is a production plant of heavy water with a capacity of 200 tons/year which is operational. This plant has been commissioned in 1989 by the company ENSI owned by CNEA and the Province of Neuquén.
(<http://www.ensi.com.ar/idoocs/company/fr-empresa.html>)

Q.No	Country	Article	Ref. in National Report
9	Australia	Article 5	G.2.1, Page 84

Question/ Comment When will the new dry storage facility come into operation?

Answer In CNAI, where the refueling takes place during operation, Fuel Elements (FE) are consumed in the reactor core at a rate of approximately 0.70 FE per day of full power. Once the extraction is reached, the burned FEs are stored in the decay pools under water.

Currently the available space in the pools is enough to operate the plant until March / April 2015, at an average annual load factor of 85%.

The design life for the CNAI is 32 years at full power. This is expected to take place in December 2017. That is, with a construction of the new facility, it could continue to generate power about 33 months after the exhaustion of the capacity of normal storage pools.

Basically the concept is to remove from the pool the spent fuel with longer decay (about 30 calendar years) and store them into dry silos located in a specially designed building that will be an extension of the Pool Building I.

Conceptual Engineering is under the final stages of revision.

With regard to basic engineering, there were two technical updates applied during the execution of it:

- a) Extension of the Facility to extend the operation of the plant 40 years of full power.
- b) After the earthquake and tsunami in March 2011 in the Japanese NPP in Fukushima Daiichi. Operators around the world were forced to fulfill new requirements, such as seismic margin assessment, internal flooding, tornadoes and other external events.

Due to these new requirements, it is estimated that the basic engineering project will be completed in June, 2012.

Since the final documentation of civil engineering has been concluded, and in order to promote the start of construction, a phase of underground interference determination has begun at the site.

Despite this, there is quite a tight schedule for the project to be operational in March, 2015.

For this reason, and so as not to affect the operation of the CNAI, we have evaluated the following alternatives:

- a) Release pools positions currently occupied by internal components of the reactor, non-combustible elements, and thereby gain 3 or 4 months of operation.
- b) Transfer of SF from Unit I to the Pool Building of Unit II.

For item b corresponding management is carried out for the acquisition of a transfer cask that allows the movement of an appropriate amount of SF, and thus not to affect the normal operation of the plant.

Q.No	Country	Article	Ref. in National Report
10	United Kingdom	Article 5	Section G.2.1, Pages G – 1 and G - 2

Question/ Comment The text here gives information on the storage capacity of the Atucha 1 Pool Buildings. The storage capacity of Pool Building I is given as 3240 positions, and the storage capacity of Pool Building II is given as 6912 positions.

The text on page B-1 of the report gives the available storage space at Atucha 1 as 1808 positions.

Could Argentina please clarify the number of designed storage positions at Atucha 1?

Answer The design storage capacity is stated in G-2 and is prior to the re-racking project, which adds the positions indicated in B-1. The current Spent fuel storage capacity at CNAI is 11544; 3240 positions at Pool Building I (not affected by re-racking) and 8304 at the Pool building II (as a result of re-racking).

The number of free positions by December 2011 was 1167.

Q.No	Country	Article	Ref. in National Report
11	United Kingdom	Article 7	Section G.4, Page G – 6

Question/ Comment The text here shows Kraftwerk Unión Siemens AG as the designer of the Atucha II power plant.

Could Argentina state how it considers the Atucha II project will be affected by the decision by Siemens to cease operating in the nuclear field?

Answer The Argentine Government, by Decree N°981/05, has established the project to resume the completion of Atucha II NPP through Atucha II "Management Unit" which depends of the Responsible Entity Nucleoeléctrica Argentina SA (NA-SA). According to the IAEA NS-R-1 and NS-R-2 requirements as well as INSAG 19, ARN has required, the conformation of a Design Authority in order to observe the design, construction, startup and future operation of Atucha II NPP. The Design Authority is formed by national and international experts. That Design Authority is empowered to review, monitor and audit, on a regular basis, all design issues related to nuclear safety, to be then evaluated both by the Responsible Entity and ARN.
Therefore, the project has an appropriate organization for the assessment of it, without which the design would not be acceptable by the NA-SA or by the ARN.

Q.No	Country	Article	Ref. in National Report
12	United States of America	Article 7	G.2.2, G-3

Question/ Comment The Draft IAEA Action Plan on Nuclear Safety was approved on September 5, 2011, and includes recommended member state actions to improve facility nuclear safety. Has Argentina examined nuclear safety, particularly spent fuel and radioactive waste management facilities storage, in the context of the Fukushima incident? If not, what are Argentina's plans to implement recommended actions. During your presentation on the National Report please elaborate on the response and lessons learned relevant to the Joint Convention.

Answer As a Fukushima accident response, the Argentinean Regulatory Body (ARN, Nuclear Regulatory Authority) and the Licensee / Responsible Entity of the Argentinean NPPs under operation (NA-SA, Nucleoeléctrica Argentina S.A.) carried out some activities aimed to implement the lessons learned from Fukushima.

ARN performed inspections to assess the readiness of mitigating systems including emergency preparedness, backup power sources; hydrogen mitigation systems and spent fuel storage systems.

The Forum of Iberian-American Regulators Organization (Forum) decided to require to all NPPs of the member countries a Resistance Assessment (a comprehensive safety assessment) like the Stress Tests required by Western European Nuclear Regulators Association (WENRA). As a Forum member country, Argentina through ARN requested NA-SA to conduct a Resistance Assessment (Stress test) whose main objective is to determine the Atucha I NPP (CNA I); Atucha II NPP (CNA II) and Embalse NPP (CNE) performance to face

beyond design basis extreme events occurrence which could cause the safety functions loss aimed to detect any weaknesses and implement related improvements.

The Resistance Assessment considers the beyond design basis extreme events that could occur in each NPP site; the loss of safety functions for each extreme event considered and the corresponding severe accident management activities. Therefore, this requirement consists of a reassessment of the NPPs safety margins assuming that a sequential loss of the lines of defence in depth occurs.

The requested assessment includes the extreme conceivable initiating events at each site; loss of safety functions caused by each initiating event considered; the management of consequent severe accidents and internal emergency management considering:

- The long term evolution of the severe accidents caused by the above mentioned extreme events and the recovery capability of both the power supply and the water supply until a stable plant condition is reached. This is to identify the more adequate recovery strategies and the components that must be available for the corresponding strategies implementation;
- Safety implications derived from multiple reactors in the site, identifying and implementing the corresponding measures and the procedures to use the existing means in one unit in other units;
- Spent fuel storage management strategy and spent fuel storage systems design and performance in case extreme events occurrence;
- Arrangement / disposal of structures, equipment and components belonging to safety systems to assure they could continue fulfilling the corresponding safety function in case of extreme events occurrence;
- Prevention, recovery and mitigation measures: automatic and operator actions for abnormal conditions; emergencies and severe accidents management;
- Availability of the NPP's resources to face on-site and off-site emergencies caused by beyond design basis extreme events that provoke severe accidents. In particular, since the event occurrence until the ARN takes the emergency management, including the planning and action management considering the public protection and the corresponding communication.

The results of the Resistance Assessment will be examined in a peer review by the Forum members, who will issue a final document containing an executive summary with the review results and the general conclusions. Finally, the Forum final document will be presented in the Second Convention on Nuclear Safety Extraordinary Meeting.

On the other hand, as a way to review the lessons learned from the Fukushima accident, NA-SA carried out a verification of the NPPs capability to mitigate conditions that result from beyond design basis accidents; station black out; internal and external flooding and; spent fuel storage systems performance.

Q.No	Country	Article	Ref. in National Report
13	Denmark	Article 12	H, 100

Question/ Comment (AGE final disposal facilities, Semi-containment System for very low level Radioactive Liquid Waste): Which steps have been taken towards ensuring that the radionuclide inventory has decayed to “non-significant levels” before they reach “an environment accessible to the public” What is meant by the phrase: ”an environment accessible to the public”? Is the reference made to for instance drinking water reservoirs, lakes, coastal tracts?

Answer Semi-containment System for very low level Radioactive Liquid Waste and very short periods (which has already completed its operation) consists of trenches filled with a layer of silt-rich calcareous clays with high retention capacity. Numerous studies and soil tests at the site are performed to ensure that the radionuclides remain in these sediments retained long enough to decay before the contact with the phreatic aquifer.

Studies on the adsorption of fission products by soils in Ezeiza began in 1960 [1] and were continued throughout the decade, with emphasis on the evaluation of the rate of migration of different radionuclides to determine the capacity of dispose residues in the AGE. Based on these studies, the semi-containment system for liquid radioactive waste was designed and began its operation in 1971.

During and subsequent to the trenches operation, the disposed radionuclides migration has been evaluated in different ways.

For example, probes have been introduced into the tubes radiometric vent trench to measure the rate of exposure in depth at different points.

On the other hand, flow and transport models have calculated the maximum depth reached by the radionuclides, the volume of contaminated soil, the activity concentration and dose rate external irradiation. The result of these calculations is consistent with the dose rates obtained with the radiometric measurements.

Furthermore, in the groundwater samples obtained in wells surrounding these trenches, the presence of radionuclides has not been observed.

Especially in the case of this system, in the design, it was considered very conservatively that the phreatic aquifer would be "the environment accessible to the public".

[1] ANGHILERI, L. Estudio de la Adsorción de Productos de Fisión por Tierra de Ezeiza. Comisión Nacional de Energía Atómica. Informe N°35. Buenos Aires, 1960.

Q.No	Country	Article	Ref. in National Report
14	France	Article 16	K

Question/ Comment Could Argentina indicate how the experience feedback from the Fukushima accident will be taken into account in the safety of spent fuel and radioactive

waste management in Argentina?

Answer There is an ongoing comprehensive safety assessment of the Argentine nuclear power plants in the light of the lessons available from Fukushima accident. This study is similar to Stress Tests performed in Europe. During the presentation of the 4th Review Meeting, it is expected to provide further details on these findings.

Q.No	Country	Article	Ref. in National Report
15	Germany	Article 17	B.4.3, B-8

Question/ Comment What is the capacity of the low level radioactive waste repository (Ezeiza Radioactive Waste Management Area - AGE) and when will the repository be closed?

Is the planned 50 years post-closure institutional control of AGE based on a continuous monitoring program?

Answer The Semi-containment System for the final disposal of low level solid radioactive waste is constituted by two trenches:
Trench N° 1 completed its 700 m³ capacity and its useful life in 1988 when the closure cover was completed.
Trench N° 2 started operating in 1988 with a capacity for 5600 drums (1120 m³). In 1993, it was partially covered with 2632 drums (526.4 m³), its closure had been foreseen for the year 2005, but its operation was suspended in 1999 with a total of 4419 drums emplaced in it (883.8 m³) and finally, in early 2010, the 1787 not covered drums were removed.

The semi-containment System for very low level Liquid Radioactive Waste comprises three trenches with sand enhanced calcareous lime bed that when considering their dimensions, the capacity can be estimated in 400 m³ for each one.

The Structural Material Final Disposal System is a modular system integrated by two silos of 100 m³ each. Silo N°1 is completed and closed and N°2 is practically empty, only 0.5 m³ of waste has been disposed in it. Besides, two smaller pits with historical waste of 10 m³ and 30 m³ respectively complete the structural disposal system.

It is expected that a 10-year period has to pass by in order to proceed with the closure of the facility.

During the determined period of Institutional Control, a continuous monitoring program is foreseen.

Q.No	Country	Article	Ref. in National Report
16	France	Article 18	A. - p. 3

Question/ Comment According to the Federal Government adopted in Argentina, a number of provincial and municipal regulations are in force with a significant impact on radioactive waste management activities in the country.

Could Argentina provide a few examples regarding this topic?

How is ensured the coordination between the national level and the provincial and municipal levels?

Answer Regarding the Federal system adopted by the Argentine Republic, its provinces establish their own local institutions and write their own constitutions ensuring in this way their provincial autonomy.

Based on this system and on the general principle whereby provinces keep their powers not delegating them to the Republic, several provinces have declared to be “non nuclear” and in some cases forbid the entry, manufacture and transport of radioactive wastes and substances, for instance, the City of Buenos Aires, the province of Chubut, Salta, Tucumán. Likewise, several towns have declared entire cities as “Non Nuclear Areas” or areas where high level nuclear repositories are banned, for instance, the case of the Town council of the city of Córdoba and the Town council of Epuyen.

Overall, whenever a response on integrated legislation is needed, there is a tendency to foster what is known as “federal coalition”. Through this system, the delegation of primary powers may be corrected by means of coordinating instruments within an organizational framework as those applied in other areas, where the role of the National State is binding. The reason is that the federal administration is endowed with a further gathering of techniques and financial resources along with expertise and jurisdiction. In fact, it may conceive the issue in global terms without the limitation of interior borders and has a superior power on any Argentine province which suffices to bind any decision. In former experiences, said instruments were “Nation-Provinces Agreement Act” whereby the federal government calls for the provinces to form part of a signatory agreement, interjurisdictional committees, treaties or interprovincial agreements. There exist different mechanisms in order to guarantee the coordination between different government spheres. For example, in the case of facility sites intended for the final disposal of radioactive wastes, it is essential for locations to be previously approved by a law enacted in the province where it is intended to be built (Law 25018).

Notwithstanding, in accordance with section 13, Law 24804, sites of radioactive waste treatment plants and the temporary and definitive repositories that CNEA or the government corporation NASA have in operation along with their extensions and its maritime, air, land or river routes do not require a special legislative authorization or one written by town councils or provinces either the repository location or their access routes in order to continue in operation or to make the access or withdrawal of said repository wastes.

Q.No	Country	Article	Ref. in National Report
17	France	Article 19	E. - p. 8

Question/ Comment The regulatory actions that may be taken by the Nuclear Regulatory Authority (ARN) regarding a particular facility may originate from the knowledge of abnormal events that have occurred at the facility or at a similar facility.

Could Argentina clarify the specific requirements for declaring events to the ARN and detail the corresponding procedures (maximum delays, type of information, public information, use of INES scale, etc.)?

Could Argentina give examples of regulatory actions taken by the ARN following abnormal events regarding the safety of spent fuel and radioactive waste management?

Answer The events that the operator must communicate to the ARN, as well as the time of their communication, are established in the operation license. This information has to be provided in a written document, unless the ARN establishes other communication media.

Any relevant event which implies an overexposure of people, a significant radioactive material release or a failure of an important system must be notified according the following steps:

- Immediately after the detection of the event: brief description
- During the 24 hours after the detection of the event: a detailed description of the facts
- During the 30 days after the detection of the event: a complete inform of the event

Each relevant issue regarding radiological protection is notified to the INES contact point, responsible for the report of such database.

There is an ongoing comprehensive safety assessment of the Argentine nuclear power plants in the light of the lessons learned from Fukushima accident. This study is similar to Stress Tests performed in Europe. During the presentation of the 4th Review Meeting, it is expected to provide further details on these findings.

Q.No	Country	Article	Ref. in National Report
18	United Kingdom	Article 20	Section E.3.2, Page E-15

Question/ Comment The report states:

“The regulatory control of Spent Fuel Management and Radioactive Waste Management is performed as part of the global inspection and evaluation tasks of facilities controlled by ARN, estimated at a total load of approximately 3770 worker/day, where this activity represents 16% of all the activities of the involved sectors.”

Using the information in the report, it is possible to make the following calculation:

$3770 \text{ worker days on spent fuel and waste management} \times 100/16 = 23562 \text{ worker days for all activities.}$

ARN has 381 workers of whom 87% are technically qualified = 331 technically qualified workers

$331 \times \text{ca. } 220 \text{ available working days/ worker/year} = 72820 \text{ available worker}$

days/year.

It is unclear how 16% of the available annual effort within ARN of about 72820 worker days relates to the 3770 worker days devoted to regulatory control of spent fuel and radioactive waste management. Assuming 220 available working days/year for each worker, the percentage appears to be closer to 5% than 16%?

It would help if Argentina could clarify how the 16% figure is calculated.

Could Argentina clarify the relationship between the available technically qualified workers in ARN and the percentage of activity in the area of spent fuel management and radioactive management?

Can Argentina provide details of the activities in the involved sectors?

Answer The estimation mentioned of 3770 worker-day represents the 16% of the total activities of only the involved sectors, not the 16% of the total activities of the Nuclear Regulatory Authority.
About 5% of the technically qualified workers of the entire ARN are dedicated to spent fuel management and radioactive waste management area.
Involved sectors
The description of the activities performed in the involved sectors can be found in section E 3.3. of the Third National Report to the Joint Convention.

Q.No	Country	Article	Ref. in National Report
19	United Kingdom	Article 20	Section E.3.3, Page E - 15

Question/ Comment The report refers to the subject of uranium contamination of drinking water in Ezeiza.

Could Argentina please provide an update, particularly in relation to whether the chemical toxicity of uranium in aquifers and possibly in drinking water exceeds WHO 'orientation' levels?

Answer Assessments by international and national organizations have concluded that the amounts of uranium measured in the samples of drinking water of Ezeiza respond to the normal distribution of natural uranium that is found in soils, rocks and ground water with a large spatial and temporal dispersion, typical of a major element such as uranium in soil. This means that in Ezeiza uranium contamination of human origin does not exist.
For the purposes of the toxicological evaluation of the uranium concentrations, we have proceeded according to the following:

- Use the guide level of 100 µg/L established by Law 24,051 "Legal regime of hazardous waste to drinking water" (whose value is consistent with the value established by Law 24,585 "Mining activity - Environmental Impact").

- Consider the precautions, explanations and practical recommendations from WHO on the scope and technical feasibility of implementing the recommended guideline level for the content of natural uranium in drinking water (30 µg/L), published in its revision 4 "Guidelines for Drinking Water Quality."

First, the natural uranium concentration of all measured samples is significantly below the level established by the legislation in force in Argentina. Second, the WHO recommends specific reference values for water quality, with a provisional guideline value for uranium due to the high degree of uncertainty in the data associated with toxicological effects. WHO also highlights the need for Member States to develop their own standards, taking into account the wide variety of environmental, social, cultural, economic and feeding conditions, which necessarily involve the possible exposure of human beings. This could result in that national standards of the Member States could differ significantly from the standards of that organization. For all these reasons, some countries have their own specific guidance levels that differ in some cases from levels recommended by WHO, which is the case in U.S., Canada, Finland and Argentina.

Q.No	Country	Article	Ref. in National Report
20	United Kingdom	Article 20	Section E.3.3.5, Page E - 20

Question/ Comment Figure III shows 81% of the budget distribution of regulatory tasks is spent on reactor licensing, 3% is spent on Class 1 facilities and 2% is spent on power reactors.

Could Argentina please clarify if the 81% figure is associated only with Atucha II? If not could it further explain the facilities covered by this figure?

Can Argentina also confirm that the 2% is associated with the operating power reactors at Atucha I and Embalse?

Could Argentina clarify whether the proportions of the budget have been determined using the criteria of the relative risks to the population posed by the operating reactors, versus those from the Atucha II unit at its current stage?

Answer As the chart title indicates, the percentages refer to inspection regulatory tasks. In 2010, the 57% of the ARN total Budget was assigned for “inspection and assessment tasks”. The 81% of this figure was assigned for inspection and assessment tasks related to Atucha II NPP licensing, Embalse NPP life extension and CAREM reactor licensing.

This figure was high because of the need for qualified professional collaboration, coming from recognised external institutions.

Argentina confirms that the 2% is associated with normal regulatory tasks in the operating power reactors Atucha I and Embalse. Embalse NPP life extension is not included in this figure.

The last question is answered in the second paragraph. The assigned budget is a consequence of a detailed planning of the regulatory tasks to be done in order to verify the fulfilment of safety requirements.

Q.No	Country	Article	Ref. in National Report
21	Denmark	Article 22	F, 82

Question/ Comment (Section F.6.6): Costs of decommissioning lie with the operator of a given nuclear facility be it private or the National Government of Argentina. Do these costs include final disposal in a future Deep Geological Repository and are the costs associated with establishing such a Deep Geological Repository also to be carried by the operators/source users as implied by the summary table in section K-11?

Answer Most of nuclear facilities in Argentina are state property and are operated by national entities, so the cost of decommissioning and final disposal will be afforded by the National State. Operators of small private facilities have to afford the cost of decommissioning and pay a fee for the management of waste generated, including final disposal.

Q.No	Country	Article	Ref. in National Report
22	Slovenia	Article 22	F.2

Question/ Comment Could you explain the reasons why the National Congress has not approved the Strategic Plan for Radioactive Waste Management (PEGRR) as prepared by the CNEA?

Answer According to the statement in the Fourth National Report during 2011, tasks were carried out of reviewing and updating the Strategic Plan for Radioactive Waste Management (PEGRR). This review took place under the major changes and decisions made in the nuclear field and the statements of the National Law No. 26566, enacted in November 2009, which declared some of the priority projects to be of national interest for the developing Argentine nuclear activity. Also, the update of the PEGRR has been imposed by Law No. 25,018, which establishes the system of Radioactive Waste Management, through which the CNEA is responsible for the obligation to update the PEGRR every three (3) years.

The new version of PEGRR after the intervention of the Nuclear Regulatory Authority and the NASA is going to be sent to the National Executive for subsequent submission to Congress by the current year.

Q.No	Country	Article	Ref. in National Report
23	Slovenia	Article 22	F.2

Question/ Comment What are the main differences between the Strategic Plan for Radioactive Waste Management (PEGRR) and the National Program of Radioactive Waste Management?

Answer The National Program of Radioactive Waste Management is the organization implemented by CNEA to fulfill the responsibilities assigned by the Law 25018. One of these responsibilities is to elaborate and propose to the National Congress a Strategic Plan for the Management of Radioactive Waste (PEGRR, acronym in Spanish) describing all the activities that must be fulfilled including the final disposal in a sustainable way.

Q.No	Country	Article	Ref. in National Report
24	Australia	Article 22.2	F.2

Question/ a) Financial support – will the question of guaranteed financial support for the

Comment Management and Disposal of Radioactive Waste be raised again with National Congress?

b) What are the long-term implications if unsuccessful?

Answer a) Currently the management of radioactive wastes is financed by the National Treasury with the Congress approval of the annual budget law. b) As mentioned in the previous section, the funds necessary for the management of radioactive wastes are provided by the National Treasury on the basis of a budget prepared by CNEA and approved by Congress. Therefore, regardless of the approval of the Strategic Management of Radioactive Waste financing the management of such waste is guaranteed by the federal government. Moreover, it is noteworthy that since before the enactment of LawNo.24804 and 25018, CNEA has had a specialized sector in the management of radioactive waste, which has been financially supported by the National State since the beginning of nuclear activities in Argentina.

Q.No	Country	Article	Ref. in National Report
25	Czech Republic	Article 24	L22

Question/ Comment How is the effective dose specified in the “Norma AR 4.1.3.” Fig.1 and Fig.2 (projected or residual effective dose)?

Answer The effective dose considered at AR 4.1.3 standard is projected.

According to the BSS 115 definitions:

Projected dose: The dose that would be expected to be received in the absence of planned protective actions and

Residual dose: The dose expected to be incurred after protective actions have been fully implemented (or a decision has been taken not to implement any protective actions).

The AR 4.1.3 standard claims that:

“20. The effective dose calculation must take into account meteorological conditions and their probability of occurrence while, on the contrary, it should not consider the eventual application of countermeasures. “

Q.No	Country	Article	Ref. in National Report
26	France	Article 24	F. - p. 16

Question/ Comment Regarding the occupational exposure in the radioactive waste management facilities corresponding to the 2006-2010 period (chart 10), it should have been more interesting to have the average year by year for a greater understanding and comparison.

Answer A hard copy of the year by year average (2006 – 2010) of occupational exposure in the radioactive waste management facilities will be provided for your delegation during the Revision Meeting. We will consider the possibility of including such degree of details in the next National Report.

Q.No	Country	Article	Ref. in National Report
27	United Kingdom	Article 24	Section F.4, Page F - 13

Question/ The text includes the following:

Comment

“When the annual dose in the critical group does not exceed 0.1 mSv and the annual collective dose does not exceed 10 man-Sv, a demonstration of optimization is not foreseen unless expressly required by the Regulatory Body.”

Could Argentina state how this practice “demonstration of optimisation” relates to the ALARA principle?

What are operators expected to demonstrate if these limits are not exceeded?

Answer The optimization of the level of protection (i.e. the application of the ALARA principle) is a general requirement both for workers and for members of the public, and the safety case shall include the appropriate information showing that those levels are complied with, including an assessment of alternative approaches. However, as such demonstration has a cost, it has been considered reasonable to exempt the applicant of such requirement when the individual and the collective dose are not relevant. In spite of this, there are some cases where the Regulatory Authority may consider necessary to require such a demonstration even if the individual and collective dose associated with a source of exposure are very low (e.g. Consumer products.)

Q.No	Country	Article	Ref. in National Report
28	United Kingdom	Article 24	Section F.4.1, Page F – 15

Question/ Comment The List of Acronyms at the beginning of the report on page v refers to the RA-0, RA-1, RA-2, RA-3 and RA-6 research reactors.

Chart 9 on page F-15 lists the discharge data for RA-1, RA-3 and RA-6.

Page F-21 indicates that RA-2 has been fully decommissioned.

Could Argentina please clarify which research reactors are currently operating?

Could Argentina please provide an update of the state of decommissioning of any research reactors that are no longer operating?

Answer The operating research reactors are: RA-0, RA-1, RA-3, RA-4 and RA-6. In the Chart 9, research reactors RA-0 and RA-4 are not included, because they are small reactors for academic purposes that do not produce discharges. The RA-8 research reactor is under the process to resume operation. RA-2 is the only one decommissioned research reactor.

Q.No	Country	Article	Ref. in National Report
29	United States of America	Article 24	F.4.1, F-14

Question/ Comment The report states that "a value of 10,000 U.S. dollars per man-Sievert is used to represent the proportionality ratio between the social cost and the collective dose." Please provide the basis for this cost per avoided man-Sievert.

Answer The cost of 10,000 U.S. dollars per man Sievert applied to optimization was

established taking into account the international trends during the seventies.

Nowadays, the need for updating this value is under consideration.

Q.No	Country	Article	Ref. in National Report
30	Australia	Article 24.1	Page 73

Question/ Comment Dose limits for the public – what is meant by “crystalline”?

Answer In this context, “crystalline” means “lens of eye”.

Q.No	Country	Article	Ref. in National Report
31	Australia	Article 24.1	Page 73

Question/ Comment Dose constraints for the public – will the critical group concept be replaced by the “representative person”, following the recommendations in ICRP 101?

Answer Yes, to replace the concept of critical group by “representative person” is foreseen in the near future.

Q.No	Country	Article	Ref. in National Report
32	Australia	Article 24.1	F.4.1

Question/ Comment How was the figure of US\$10,000 per man-Sievert arrived at, and is this value reviewed regularly?

Answer The cost of 10,000 U.S. dollars per man Sievert applied to optimization was established by taking into account the international trends during the seventies.

Nowadays, the need for updating this value is under consideration.

Q.No	Country	Article	Ref. in National Report
33	Australia	Article 24.2	E.3.3

Question/ Comment a) The work done by Stradling, Hodgson, et al. in the UK has established a clear value (3 ig/g) above which the uranium content in the kidney poses a significant health risk. Is there any plan to mitigate this risk, particularly with respect to the uranium levels in the drinking water at Puelche?

b) Has the source of the elevated uranium levels in the water at Puelche been clearly identified?

Answer The answer for this question can be found in pages E-18 and E-19 of the Third National Report to the Joint Convention, where the conclusions of an International Peer Review (IAEA, WHO, FAO/IAEA, PHO, UNSCEAR, IRPA, ICRP and Seibersdorf International Laboratory) were presented:

“Finally, the National Government, upon the request of the Judge of the case, has asked several organizations from the United Nations and specialized International Scientific Institutions, coordinated by the IAEA, to prepare an international expert’s report. The conclusions of said international expert’s report were the following:

“With reference to its objectives, the international expert’s report has allowed to conclude as follows, with a high degree of certainty:

- There is no anthropogenic (of human origin) contamination with radioactive

elements in surface soil, in the subsoil, nor in the surface or underground waters used for the supply of water for human consumption in the area constituted by the districts of Ezeiza, Esteban Echeverría and La Matanza of the Province of Buenos Aires (Argentina). In particular, no presence of enriched or depleted uranium has been detected.

- There is natural uranium in the Puelche groundwater, as a result of natural geochemical processes.
- Radioactivity levels measured in the underground waters comply with the international standards of radiological protection and, therefore, do not represent any danger for human health.
- Water for consumption supplied to the population of the above mentioned neighborhoods does not contain radioactive elements at levels that may be harmful for the health.
- Upon the results of the performed measurements of the water samples, no damaging sanitary effects are foreseen due to the exposure to ionizing radiation. Sanitary statistics back this conclusion.
- As there is no anthropogenic contamination with radioactive elements, no contamination whatsoever may be attributed from this type of activities that have been performed or that are being performed at the CAE(Ezeiza Atomic Centre) site.
- The Argentine Nuclear Regulatory Authority adequately regulates the activities of the CAE. ”

Q.No	Country	Article	Ref. in National Report
34	Czech Republic	Article 25	F20/80

Question/ You do not mention in this section any exercises. Are there some exercises conducted? If yes, how often? Do you participate in some international exercises?
 Comment

Answer Each facility must have an emergency plan approved by the ARN and prove its effectiveness through application exercises, once a year as a condition of the operating license.
 The ARN participates annually in international exercises proposed by the IAEA

Q.No	Country	Article	Ref. in National Report
35	Czech Republic	Article 25	generale

Question/ What is the periodicity for verification of internal emergency plans?
 Comment

Answer The periodicity is annual.

Q.No	Country	Article	Ref. in National Report
36	France	Article 25	F. - p. 18

Question/ Argentina has on-site and off-site emergency plans in case of radiological accidents which may cause a state of emergency.
 Comment

Could Argentina clarify the local and national emergency organisations (headquarters, emergency cells, means...) put in place, allowing the implementation and operation of the plans? Are local and national exercises regularly organized to test the efficiency of the plans?

Moreover, could Argentina specify how the experience feedback from the Fukushima accident will be taken into account to improve the emergency plans?

Answer Any event beyond the normal operation that activates the emergency's plan alerts.

The Municipal, Provincial and National Civil Defense conducted by the ARN carries out the external emergency plan. Along with these organizations, the following are involved: law enforcement (Police, National Gendarmerie and Coast Guard) and the armed forces (Army and Navy). There are regular exercises to test the effectiveness of emergency plans: municipal, provincial and national levels.

As from Fukushima accident, a review is being made of the elements of infrastructure related to the emergency plan at different levels.

Q.No	Country	Article	Ref. in National Report
37	Australia	Article 26	F.6.4

Question/ Comment Does this imply that plans for dismantling and decommissioning have to be presented as part of the original license application, i.e. before a license to construct a facility can be issued?

Answer The preliminary decommissioning plan is part of the original license for construction of new facilities, including Atucha II NPP.

For the facilities in operation, the presentation of Preliminary Decommissioning Plan is being considered during the Periodic Safety Review according to the applicable international standards.

Q.No	Country	Article	Ref. in National Report
38	United States of America	Article 26	F6.4, F-21

Question/ Comment Although the National Report states that no decommissioning is planned, it also states decommissioning is foreseen. Please elaborate on current plans and strategy to support future decommissioning, such as retaining qualified staff, records management, and decommissioning criteria.

Answer Decommissioning is included in the Strategic Plan of the Argentine Atomic Energy Commission. As a result, the following activities are planned to be completed in the period 2012-2018.

- Perform and improve preliminary decommissioning plans, estimating waste streams for all nuclear facilities during their operation.
- Promote, coordinate and carry out technological developments of decontamination and cutting.
- Management of radiological structural components from NPPs and other small nuclear facilities.
- A safety training program to any and all new employees, which during this period will be incorporated to this activity. This program is designed with the basis of a specifically built knowledge management database and the record of the management of each facility in order to improve the transfer of the embodied skills and expertise from the qualified staff.

Q.No	Country	Article	Ref. in National Report
39	Australia	Article 27.1	Section I, Page 107

Question/ Comment If aluminium-clad spent fuel from the Australian OPAL research reactor is required to be returned to Argentina under contractual arrangements for conditioning, how will this transboundary movement be accommodated?

Answer Currently there are not contract whatsoever in this regard. Should any transboundary movement be necessary under any contractual arrangements, there would not be any inconveniences to perform them.

Q.No	Country	Article	Ref. in National Report
40	Slovenia	Article 28	J.3

Question/ Comment "In case that radioactive sources are deposited in customs premises for more than 30 days, ARN must be notified..."

Did you have any negative experience in this regard and if any, how were they dealt with?

Answer No, up to now, there were no negative experiences

Q.No	Country	Article	Ref. in National Report
41	United States of America	Article 28	J.2, J-2

Question/ Comment Has Argentina considered adopting a policy to encourage returning sealed sources to the manufacturer at the end of their useful life? The report states that "only facilities having appropriate resources may handle radioactive sources." What requirements are in place to ensure they have adequate financial resources? Are there policies, procedures and resources in place to address the detection of sources not declared on a manifest?

Answer Regarding radioactive sealed sources exported abroad Argentina does not count with an specific policy to encourage returning sealed sources to the manufacturer at the end of their useful life. Regarding sealed sources used within the country, it is encouraged to return them to the manufacturer at the end of their useful life. But this is not the only alternative for their management in case of an Argentine manufacturer, licensees, in general, adopt the policy of returning the disused sources to its manufacturer, for example in case of Ir-192 for industrial gammagraphy.

So far, Argentina has not requirements in place to ensure that facilities have adequate financial resources to handle radioactive sources. The requirements in place are related to the knowledge and training of facility's staff and legal situation of applicant to the license.

In relation to the detection of radioactive sources not declared on a manifest, up to now, the detection has occurred:

- Through regulatory inspections, if the sources were not declared "inadvertently";
- Through end user's declaration, as it happened with a shipment containing more radioactive activity than declared by the shipper facility at the export State.
- Through portals, in facilities that use scrap as raw material for its business.

Q.No	Country	Article	Ref. in National Report
42	United States of America	Article 28	J.3, J-2

Question/ Comment The report mentions that disused sources are kept in temporary storage and "In case of any other situation determined by ARN" may be transferred to a facility

especially licensed and operated by CNEA. What criteria does ARN use to determine the need for movement of the disused sources?

Answer The criteria used to determine the need for movement of the disused sources is based on not compromising the safety and security of the source. Some examples when movement of the source is determined are:

- The holder does not have a license because it has expired.
- The legal/financial situation of the holder adds radiological risk to this interim storage, because of Safety and/or Security reasons.
- The facility has records of inadequate Safety and Security issues.

Q.No	Country	Article	Ref. in National Report
43	United States of America	Article 28	J.8, J-5

Question/ Comment The national report states, "Readmission to the country of decayed sealed sources," also indicates that ARN authorizes import of decayed radioactive sources on a case-by-case basis "when the importer duly justifies its use." Does "use" include disposal? What are the specific criteria for importing disused sources?

Answer In the context of paragraph J-8 "use" does not include disposal. The specific criteria for importing disused sources in Argentina is that these disused sealed sources, declared as such, in the country from where they come from have another use in Argentina in a legal and justified practice (from the radiological point of view) different from disposal. The importer is licensed for this practice.

Q.No	Country	Article	Ref. in National Report
44	Slovenia	Article 32	B.3

Question/ Comment Please provide more information on the procedures, involvement and limitation of public participation in the plans.

Answer At the first stage of the communication plan, it is intended to include the topic of radioactive wastes along with the benefits of nuclear power and radioisotope applications as a byproduct responsibly treated which does not create risk either for the public or the environment. Among planned actions, the following are worth being mentioned: audiovisual aids, mock-ups and other graphic elements, the participation of specialized and non specialized audiovisual and graphic journalistic media, as well as the participation in relevant social and cultural events.

Overall, this stage of scientific spreading and coverage is intended for the general public, students from different educational levels, teachers and professors, non-profit organizations, officers, politicians and professionals. In the mid and long term, CNEA shall focus on those inhabitants who live in the surrounding areas of the possible sites for new repositories, especially when taking into account that the site for a repository has to be previously approved by the Law enacted in the province where it is to be located after a prior public hearing is conducted. Before this instance, it is essential to develop the necessary communication strategies and to engage the community in the project to avoid social prejudice. In the case of closed remedial uranium sites, communities have

been already identified. Therefore, over the last years, we have directly worked with Malargüe community where remediation works have already begun and also, as of 2012, said actions have been strengthened through the support provided by the World Bank.

Q.No	Country	Article	Ref. in National Report
45	Slovenia	Article 32	B.2

Question/ Comment Please briefly provide information on a schedule for siting and construction of a dry storage for SF.

Answer The annex building for dry storage for SF from Atucha I is foreseen to be in operation by March 2015.
SF from research reactors will be stored in a wet storage facility located in Ezeiza Atomic Center, and decisions must be taken about its processing or long term storage in a dry storage facility that will be located at the same site.

Q.No	Country	Article	Ref. in National Report
46	United States of America	Article 32	B.2, B-1

Question/ Comment The Atucha 1 nuclear power plant has sufficient pool storage for spent fuel generated until 2015. A new dry storage facility is being proposed. Section K.3.1.1 states “conceptual engineering” is underway. What is the status of this conceptual engineering? Please describe how Argentina will develop an operational facility in 2015 with conceptual engineering not yet completed. Please describe the role of public participation in this project.

Answer In CNAI, where the refueling during operation takes place, Fuel Elements (FE) are consumed in the reactor core at a rate of approximately 0.70 FE per day of full power. Once extraction is reached, the burned FE are stored in the decay pools under water.

Currently the available space in the pools is enough to operate the plant until March / April 2015, at an average annual load factor of 85%.

The design life for the CNAI is 32 years at full power. This is expected to take place in December, 2017. That is, with the construction of the new facility, it could continue to generate power about 33 months after the exhaustion of the capacity of normal storage pools.

Basically the concept is to remove the spent fuel with longer decay from the pool (about 30 calendar years) and store them in dry silos located in a specially designed building that will be an extension of the Pool Building I.

Conceptual Engineering is under the final stages of revision.

With regard to basic engineering. There were two technical updates applied during the execution of it:

- a) Extension of the Facility to extend the operation of the plant 40 years of full power.
- b) After the earthquake and tsunami in March 2011 in the Japanese NPP in

Fukushima Daiichi. Operators around the world were forced to fulfill new requirements, such as seismic margin assessment, internal flooding, tornadoes and other external events.

Due to these new requirements, it is estimated that the basic engineering project will be completed in June 2012.

Since the final documentation of civil engineering has been finished, and in order to promote the beginning of the construction, a phase of underground interference determination at the site has begun.

Despite this, there is quite a tight schedule for the project to be operational in March 2015.

For this reason, and so as not to affect the operation of the CNAI, we have evaluated the following alternatives:

- a) Release pools positions currently occupied by internal components of the reactor plus other elements different than fuel and thereby gain 3 or 4 months of operation.
- b) Transfer of SF from Unit I to the Pool Building of Unit II.

For item b, corresponding management for the acquisition of a transfer cask is carried out that allows the movement of an appropriate amount of SF, and thus not to affect the normal operation of the plant.

Q.No	Country	Article	Ref. in National Report
47	United States of America	Article 32	B.3, B-3

Question/ Comment A program for "public communication" will be implemented as mentioned in the report. Please describe Argentina's requirements for communicating information to the public. What significant public interactions have taken place since the last Review Meeting?

Answer At the first stage of the communication plan, it is intended to include the topic of radioactive wastes along with the benefits of nuclear power and radioisotope applications as a byproduct responsibly treated which does not create risk either for the public or the environment. Among planned actions, the following are worth being mentioned: audiovisual aids, mock-ups and other graphic elements, the participation of specialized and non specialized audiovisual and graphic journalistic media, as well as the participation in relevant social and cultural events.

Overall, this stage of scientific spreading and coverage is intended for the general public, students from different educational levels, teachers and professors, non-profit organizations, officers, politicians and professionals. In the mid and long term, CNEA shall focus on those inhabitants who live in the surrounding areas of the possible sites for new repositories, especially when taking into account that the site for a repository has to be previously approved by the Law enacted in the province where it is to be located after a prior public hearing is conducted. Before this instance, it is essential to develop the necessary

communication strategies and to engage the community in the project to avoid social prejudice. In the case of closed remedial uranium sites, communities have been already identified. Therefore, over the last years, we have directly worked with Malargüe community where remediation works have already begun and also, as of 2012, said actions have been strengthened through the support provided by the World Bank.

Q.No	Country	Article	Ref. in National Report
48	United States of America	Article 32	K.3.1.4, K-4

Question/ Comment The report states, "Geological data were concluded on areas fit for the sites of radioactive wastes repositories, selected at a national level and continued with the development of the geographic information system, advancing in the digitalization of geological information of different regions of Argentina" (Page K-4). Please describe the general locations and the process to gain public acceptance, for example, incentives to the local community.

Answer At the moment, we have information registered in the GIS about geological favorability of some areas.

Therefore, our geologists are working in generic sites with different types of potential host rocks, which belong to nuclear facilities. In this way, we develop knowledge and training in characterization technologies and modeling and, at the same time, a public communication program at a national level is being applied for a better acceptance of the nuclear energy in general. In the medium and long term, a Communication Plan is foreseen and incentives and benefits will be designed according to the interests and necessities of the selected communities.

Q.No	Country	Article	Ref. in National Report
49	Australia	Article 32.1.1	B.1, Page 23

Question/ Comment a) For conditioned spent research-reactor fuel, what "final disposal" options are under consideration?

- b) In Argentina, what class would such conditioned waste be classified as?
- c) Has such conditioning occurred yet in practice?

Answer a. As stated in page B-9 of the 4th National report, the disposal option for SF is in a deep geological repository.
 b. In this case, it would be HLW.
 c. Studies and developments at research level have been carried out. However at the moment no conditioning of such waste has been put into practice.

Q.No	Country	Article	Ref. in National Report
50	Germany	Article 32.1.5	B.4.1, B-5

Question/ Comment Argentina has adopted the IAEA classification system for radioactive waste based on the IAEA General Safety Guide No. GSG-1 "Classification of Radioactive Waste" from 2009. Accordingly, there are six different classes of radioactive waste in Argentina. What are the activity limits for these six categories?

Answer As stated in page B-6, 2nd paragraph of the 4th National Report: "This

classification is used only with the aim of providing information about radioactive waste inventories and organizing the information of this National Report. As regards the limits of content of level to each radioisotope, said limits will be established in accordance with safety assessment of the final disposal site once it has been selected.”

Q.No	Country	Article	Ref. in National Report
51	Australia	Article 32.2.2	D.2.3

Question/ Comment What are the total activities of each type of waste at the Ezeiza facility, and the major radionuclides?

Answer Chart D.2.3 is related to SF, which is not declared as waste. In relation to waste from AGE facility, some efforts have been made by using free modeling and simulation codes, but data need to be improved in order to publish them. A new workinggroup is about to be formed in order to get the proper knowledge about the modeling and simulation codes necessary to attend this issue.

Q.No	Country	Article	Ref. in National Report
52	Australia	Article 32.2.4	D.4.1 to D.4.5

Question/ Comment What are the total activities of each type of waste at each facility, and the major radionuclides?

Answer The facilities considered in D.4.1 to D.4.5 have been used to store or dispose of radioactive wastes produced in different peaceful atomic energy applications particularly wastes from nuclear power plants and legacy wastes have been located there. New requirements have been established by the Nuclear Authority Body to deal with the radiological inventory of wastes from nuclear power plants. A new project intends to improve and consolidate existing infrastructure and human resources in order to address national requirements in nuclear waste management, particularly in those issues related with the predisposal of radioactive wastes, including the design and development of methods and processes for characterization of nuclear wastes deriving from different sources.

Q.No	Country	Article	Ref. in National Report
53	Germany	Article 32.2.4	D.4, D-4

Question/ Comment Table D.4.3 lists the inventories of structural waste and process waste that are stored in the Technological Complex Pilcaniyeu. To which category of radioactive waste do these inventories belong to?

Answer Structural waste and process waste stored in the Technological Complex Pilcaniyeu need to be characterized before categorized. Although they could be estimated as VLLW.