Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management
Answers to Questions Posted by the Contracting Parties on the Argentina Second National Report

Seq. No 1	Country Bulgaria	Article General	Ref. in National Report Sec. K, p. K-5
Question/ Comment	Besides the planed increase of the monitoring locations at and around the Ezeiza facility, do you envisage any additional measures to ensure safety of this facility, e.g. reinforcement of the engineered barriers?		
Answer	Depending on the conclusions achieved after the end of the environmental characterization of the AGE and the safety reassessment study, different alternatives of ensuring safety will be evaluated and proposed to the Regulatory Body to decide about the future actions. One of the measures envisaged is the reinforcement of the engineered barriers.		
Seq. No 2	Country Euratom	Article General	Ref. in National Report
Question/ Comment	1) It appears that there is no specific Fund for Radioactive Waste Management and Final Disposal. It is mentioned that such fund will be set up (Section F-4, K-6). How the funding is guaranteed? What are the principles of the funding mechanism (special tax on produced energy?); 2) The capacity of the storage facilities is mentioned in Section G but there is no reference how much of the capacity that is presently used. It would be helpful if the remaining free capacity is mentioned in the terms of time till full using of the capacity of storage facility or in the amount of RW/SF which can be still placed in. This information has a direct relationship to demand for the new facilities, e.g. for the repository for low and intermediate level waste, which is planned to be operational by 2020.		
Answer	1. At present the funds necessary for the management of the radioactive waste are provided by the National Treasury on the basis of a budget that CNEA prepares and that the National Congress annually approves. One of the possibilities being now considered for future funding is based on a fee on the production of nuclear energy and contributions of the National Treasury. 2. Section G is related to SF management only. The SF storage capacity has no direct relationship to the repositories for LLW and ILW. G.2.1. CNA I Spent Fuel Storage Pools : It is estimated that the remaining free capacity would be sufficient until the year 2014. G.2.2. CNE Spent Fuel Storage Pools: The capacity of this system is adequate to the SNF management strategy adopted in the CNE, i.e. after 6 years in wet storage the SF is transferred to the dry storage system. G.2.3. Dry Storage System for CNE Spent Fuel (ASECQ): this system is of modular type construction, so its capacity can be		

	enlarged as needed. G.2.4. Centralized Storage of Spent Fuel from Research Reactors (DCMFEI): This tube-type facility is also described in the First National Report; it has capacity for 396 MTR-type spent fuels. According to the data in point D.2.3, the facility has a free capacity for 328 MTR-type spent fuels. The spent fuels already stored in this facility will be transferred to the pool-type FACIRI facility, which has a total capacity sufficient for approximately 20 years.		
Seq. No 3	Country France	Article General	Ref. in National Report Section K Page K-6
Question/ Comment	Is there an expected date for the setting of the Fund for the Management and Final Disposal of radioactive Waste?		
Answer	Under the present circumstances, it is difficult to estimate the time that these decisions will demand.		
Seq. No 4	Country Germany	Article General	Ref. in National Report p. H-9
Question/ Comment	Can you describe the procedure of conditional clearance and whether the clearance levels are in compliance with the clearance levels of the IAEA Safety Standard Series No. RS-G-1.7?		
Answer	The ARN does not establish clearance levels for release radioactive material from regulatory control, but exemption levels. AR 10.1.1 Radiological Safety Standard sets exemption criteria that could be used for withdrawal radioactive material from regulatory control. As provided in this standard, the effective dose constraint for exemption is 10 µSv/year for most exposed individuals and 1 man-Sv/year as an effective collective dose value.		
Seq. No 5	Country Japan	Article General	Ref. in National Report p.K-4, line 1
Question/ Comment	Could you indicate some results on the R&D activities on hydro-geology, geological structures as well as volcanism, to define exclusion areas? Are there any published English documents?		
Answer	The works related to hydrogeology, tectonics and volcanism to define exclusion areas are in progress. The activities on the Geographical Information System (GIS) are based on the following criteria: Hydrogeology: The main rivers of the country and a 10 km buffer zone to both sides of the stream would be excluded. The regions with more than 1000 mm/year of rain would also be rejected. Geological structures: the places affected by quaternary faults (together with a 4 km buffer zone to both sides of the fractures) were excluded. The definition of the areas with strong tectonism of the country are under study. Volcanism: The quaternary volcanic centers (and 40 km around each of them) of volcanic arcs of the Andean Cordillera were excluded. Please consult the paper by Carlos A. Ninci et al. in Chapter 2 of “Geological Challenges in Radioactive Waste Isolation – Third Worldwide Review”, Edited by P.A. Witherspoon and G.S. Bodvarsson, (LBNL-49767), Dec. 2001.		

Seq. No 6	Country Japan	Article General	Ref. in National Report p.K-4, line 1
Question/ Comment	In regard of the deep geological repository, you only touch on “granitic rocks”. Does this mean you decided host geological formation as granite?		
Answer	During the feasibility study of the deep geological repository performed in 1979-1980, only granitic rocks were considered. At the present time, clays and ignimbrites are also under study. The site selection process will continue after the assessment of these three lithologies.		
Seq. No 7	Country Latvia	Article General	Ref. in National Report Section A-3
Question/ Comment	„Within the present context spent fuel is considered a potential energetic resource due to its fissile material content. .. The decision on whether reprocessing shall form part of spent fuel management has not been made.” When do you expect decision about spent fuel to be made (more precisely than before 2030 as stated in B-1)? Who is going to prepare the draft of decision – ARN or CNEA?		
Answer	At present it is difficult to give more precisions about the decision on reprocessing. The studies and analysis for decision-making are made by the Responsible Organization for Radioactive Waste Management (CNEA) in connection to the Secretary of Energy of the Government.		
Seq. No 8	Country Latvia	Article General	Ref. in National Report L.2.2.1-L.2.2.2
Question/ Comment	We appreciate the idea of further improvements of our knowledge in foreign languages, which may be based also on reading of original documents, but for report the English translation would be preferable.		
Answer	Considering your remark, an English version of the document is attached to this text.		
Seq. No 9	Country Latvia	Article Article 1	Ref. in National Report Section B-3
Question/ Comment	“The establishment of the Strategic Plan (PEGRR) requires the definition of treatment procedures and final disposal systems for the different types of wastes. The review every three years, established by Law, ..” Why did you decide for so frequent revisions of the Strategic Plan? Do you expect any significant changes which shall be approved by the National Congress?		

Answer	The review frequency of the Strategic Plan is established in the Act 25018. The reasons for these periodic review are explained in the same paragraph quoted in the question. It is a legal requirement and it is not expected significant changes in the near future.		
Seq. No 10	Country Australia	Article Article 3	Ref. in National Report
Question/ Comment	A map showing the major nuclear facilities in Argentina would be a useful inclusion in the country report.		
Answer	In the 1st National Report, Section L.7, there is a map with nuclear power plants and other facilities and some more detailed site charts and theirs locations. These maps can be consulted in the Web site: www.cnea.gov.ar/xxi/residuos/convencion-conjunta.asp		
Seq. No 11	Country Latvia	Article Article 3	Ref. in National Report B.4..2
Question/ Comment	Class B Disposable Waste (Low level): spent sealed sources (short lived, ô<5 years), conditioned in drums and embedded in cement matrices What are the limits for activity of sources?		
Answer	The Regulatory Authority does not establish activity limits for spent sealed sources but for the disposal system. The license holder shall demonstrate that the disposal system will maintain the short half life wastes confined until the radionuclide in the wastes will decay to acceptable levels.		
Seq. No 12	Country Latvia	Article Article 3	Ref. in National Report Section B.4.2
Question/ Comment	Class M Disposable Waste (Intermediate Level) “A secondary volume of intermediate level waste consists mainly of spent conditioned sealed sources, ..” What are the limits for activity of sources?		
Answer	All intermediate wastes are at present in interim storage waiting a repository. The activity limits for each disposal system will be specified in the facility license.		
Seq. No 13	Country Germany	Article Article 5	Ref. in National Report Section G.2 and H.2
Question/ Comment	The modifications of the Argentinean licensing system described in E.2.2, which provide Periodic Safety Reviews at regular intervals and a limitation of the validity of operating licenses, appear very suitable to ensure long-term safety of spent fuel and radioactive waste		

	storage. Could you give some examples of safety re-assessments performed during the license renewal of a spent fuel or radioactive waste storage facility which ensure, in combination with the Periodic Safety Review, the long-term safety of spent fuel and radioactive waste interim storage?		
Answer	The period of validity of licenses was modified in 2003. Gradually, the validity of the Operation Licenses of Type I installations is being changed from an indefinite period of time to a restricted time validity, usually ten years. Therefore, the PSR will be part of the license renewal process and we do not have yet experience on such specific review procedure.		
Seq. No 14	Country Hungary	Article Article 5	Ref. in National Report G.2.4 p.87
Question/ Comment	Statement of the Report: 'The DCMFI, located at the Ezeiza Radioactive Management Area (AGE) is the only facility in Argentina designed and built to store in a centralized way the SF from Argentine research reactors. It comprises an underground arrangement of 2.10 m long and 0.141 m diameter stainless steel tubes. Each tube can hold two MTR spent fuel elements or one control element. The tubes are closed with a lead filled steel plug and sealed for safeguarding reasons.' Question: What type of storage system is in MTR Spent Fuel Central Storage Facility (DCMFEI) installed? Is the technology wet or dry? (The above mentioned quotations from the text are not unambiguous)		
Answer	The DCMFEI is a wet storage system. In more detail, it is also described in the First National Report (G.2.2.4).		
Seq. No 15	Country Japan	Article Article 5	Ref. in National Report p.G-4, line btm
Question/ Comment	SectionG.2.4 and section G.4 say that the facilities, FACORI, will be in operation by 2006 to store temporary aluminum based irradiated fuels as used RA-0,RA-1,RA-3 and RA-6 reactors. The name of RA-0 and RA-6 reactors is not written in ACRONYMS. What are those reactors? Which numbers in Section D.2 represent the inventory of spent fuel in these reactors?		
Answer	The missing registry of the reactors within the list of acronyms has been an omission that will be amended and it was worthwhile to point it out. The reactors RA-0 and RA-6 are located at university centers for educational use.		
Seq. No	Country	Article	Ref. in National Report

16	Korea, Republic of	Article 5	p. G-4
Question/ Comment	The report states that in a safety study on the dry storage system for CNE spent fuel, two significant potential events were identified: falling of a grid with 60 spent fuel elements with cladding cracking and the exposure of the pool operator when removing the shield while the operation cell gate is partially open. What were the major features and processes to deal with each potential event and its result?		
Answer	The mentioned safety internal study was carried out in 2003 under the title "Radioactive Sources Different from the Reactor Core: Dry Storage of Spent Fuel". In this safety study, failures in the Spent Fuel Dry Storage System (ASECQ) of CNE are identified by means of a Master Logic Diagram (MLD), not only due to the system but also to the maneuvers related to this storage. These failures could lead to a non controlled emission of radioactive substances, inside and outside the plant or to exposure of the operation personnel due to shielding damage. The study of this issue is complementary to the risk analysis detailed in the ASECQ Final Safety Report carried out in 1993. The above mentioned Master Logic Diagram considers the following aspects or scenarios: I- Failure during spent fuel handling in the pool. II- Failure during maneuvers in the operation cell. III- Failure during transfer of spent fuels from cell to silos. In every case the degradation of the containment barriers and shield were taken into account, using the value calculated in the Final Safety Report as term source. As result of the different cases analyzed, two significant events were identified: - Falling of a grid loaded with 60 ECQ with cladding damage. - The cell gate was partially opened when the pool shielding cover was removed. For the first event, considering release of all the gaseous contents in 1 hour, the maximum dose determined at 500 m was of $6x\ 10^{-8}$ Sv (6×10^{-6} Rem). To prevent second event occurrence, an interlock exists. It's controlled by a radiation detector inside the transference cell. This device works of the following way: a high radiation level detection doesn't allow the opening of the cell door although if it were wrongly requested. So, this event would occur only if simultaneously occur human mistake and interlock failure.		

Seq. No 17	Country Korea, Republic of	Article Article 5	Ref. in National Report p.G-4
Question/ Comment	The report states that the new storage system does not present the difficulties inherent to the tube system of the present facilities (DCMFEI) and will permit a better control of the SF conservation condition and proper monitoring of water quality. What are the difficulties inherent to the tube system of the present facilities (DCMFEI)? And how (in what sense) does the new storage system provide a better control of the SF conservation condition and proper monitoring of water quality? What extent may the present facility get impacts on its safety management due to the "difficulties inherent to the tube system of DCMFEI"?		
Answer	The tube system of the wet storage facility (DCMFEI) was also described in the First National Report. It has the following inconveniences: - Difficulty to attain an adequate flow of water through all the tubes - Difficulty to implement a good water chemistry control - Surface corrosion has been observed in several SF plates - Difficulty to make an in-situ observation of the conservation state of the spent fuels. These difficulties will be solved in a pool-type wet storage facility according to the FACIRI design. The difficulties of the DCMFEI may have an impact on the safety management after a few storage decades. The oldest spent fuel in inventory has 8 years, and safety problems are not foreseen before the transfer to the FACIRI facility.		
Seq. No 18	Country Ukraine	Article Article 5	Ref. in National Report G.2.3, page G-3
Question/ Comment	Is damaged spent fuel accepted for dry storage; if so, what are the specifics of its management? What is the maximum value of thermal power of spent fuel elements placed for dry storage? Were physical characteristics of fuel claddings under long-term dry storage investigated for justification of the storage period? What organisational and technical measures are taken to comply with the maximally permissible parameters for spent fuel in dry storage – effective neutron multiplication factor, fuel temperature? What are the values of these parameters? What measures are provided in the event when specific activity of aerosols or inert gases inside the silos exceeds the criteria of safe operation?		
Answer	a) When a damaged fuel element is removed from the core it is stored into a canister and this is separately stored in a pool dedicated to damaged fuel. Therefore, there is no damaged fuel transferred to the dry storage system.		

	b) The decay time of spent fuels (SF) in the water pool, before its transfer to the silos, is 6 years. The SF average power after 6 years decay is about 6700 W for a normal exit burn-up of around 7600 MWd/TnU. c) During design and construction of the silos, relevant parameters were analyzed, such as the neutron multiplication and fuel temperature, in order to guarantee the physical characteristics of the cladding during the whole storage period. The maximum permissible values as well as the criteria applied in the analysis are included in the Design Manual of the Dry Storage System (ASECQ), NASA property. d) A sample line allows to carry out at periodic intervals, measurements of air samples (aerosols and noble gases). In case the result suggests fuel damage, and according to its magnitude, an inspection and a possible intervention will be considered. Up to date, no significant indications have been detected during any periodic control. Dry storage systems for spent fuel were designed to be in use for 50 years. The Strategic Plan foresees a policy decision by 2030.

Seq. No 19	Country Ukraine	Article Article 5	Ref. in National Report
Question/ Comment	G.2.4, page G-4 G.2.4, page G-5 G.2.4, page G-6 What documents relate to «conventional and physical safety regulations»? Why was the «wet» long-term storage of spent fuel selected? What is the quantitative estimate of the probable leakage of radionuclides from the storage facility of this type? Storage of spent fuel from research reactors in water is time-restricted since degradation of fuel claddings occurs. When is this spent fuel going to be transported to dry storage facilities?		
Answer	The term «conventional and physical safety regulations» (lines 3 and 4 of page G-6) is misleading, we apologize for that. Instead, it should be written: “in compliance with nuclear safety and radiological protection regulations”. The wet storage system was selected to allow for complementary cooling and radioactive decay of the spent fuels. The technology for interim wet storage is well known and, in our case, the basic infrastructure was pre-existent and readily available (building, pool, water circulation and purification system, etc.).		

	The majority of the spent fuel to be stored in this facility will be free from defect and the damaged fuel will be encapsulated. The activity of the water will be monitored, so any radionuclide leakage from the spent fuels to the water will be detected and remedied. Furthermore, the space between the two linings of the pool will have water detection sensors for an early warning of water leakage. In summary, the leakage of radionuclides to the environment can be considered a very low probability event. In regard to the degradation of the aluminum fuel cladding in wet storage, there is ample experience showing that, as long as the water chemistry is properly monitored and controlled, the fuel cladding can withstand interim wet storage. At present CNEA is analyzing different concepts for a dry storage system.		
Seq. No 20	Country Australia	Article Article 6	Ref. in National Report page A-3
Question/ Comment	The report notes that CNEA shall propose potential sites for a final repository. These sites must have regulator approval and they must also be approved by an Act of the Provincial Government where the proposed repository would be located. Have any siting studies for a final repository been undertaken? If a site for a repository was chosen and the Provincial government did not pass an Act to approve the site, does the Federal Government have any ability to overturn the decision of the Provincial government?		
Answer	The site for the repository has not been selected yet. The federal authority has not attributions to overturn the decision of the provincial government, according to Act N° 24804.		
Seq. No 21	Country United States of America	Article Article 8	Ref. in National Report G-6
Question/ Comment	The discussion on criticality would benefit from some additional detail. For instance, what are some of the assumptions and parameters deemed to be important to criticality control?		
Answer	The principal assumptions to perform the calculations for criticality prevention are: 1. Fully complete total capacity 2. The MTR fuel stored is fresh fuel. 3. Neutron absorbers not present in the system 4. Different fuels arrangements. 5. Different scenarios for normal and abnormal operation		
Seq. No 22	Country Australia	Article Article 10	Ref. in National Report pages B1, B2 and D1
Question/ Comment	The report outlines different disposition strategies for spent LEU and HEU fuel from research and radioisotope production reactors. It is noted that HEU fuel will be returned to the country of origin (presumably the United States), and that the remaining fuel will be returned in the near future. On the other hand, LEU fuel will remain in dry storage (after cooling) until a final disposition decision is		

	made. Why is a different strategy being implemented for LEU and HEU fuels? When will the last of the HEU fuel be returned to the country of origin? In the inventory of spent fuel management facilities (D-1), there is no information given for HEU spent fuel from the research reactors. Where is this material stored and how much of it remains in the storage facilities?		
Answer	As mentioned in the First National Report (page G-8), 207 MTR-HEU spent fuels were sent to the United States of America in the frame of the Foreign Research Reactors Spent Nuclear Fuel Acceptance Policy. Argentina was able to apply for this "take back" policy for HEU spent fuel only. For that reason, a different management strategy for LEU spent fuel was implemented. There are MTR-HEU irradiated fuels elements in the RA-6 Reactor, these are not considered spent fuels because they are in use for the reactor operation, in an alternating way. It is estimated that at the end of the year 2007 all the HEU fuel material will be returned to the United States of America and the Reactor RA-6 will have a new core with LEU fuel.		
Seq. No 23	Country Australia	Article Article 10	Ref. in National Report pages A-2 and F-4
Question/ Comment	The report notes that the Strategic Plan for Radioactive Waste Management has not been approved by Congress. It also notes that the decision to complete the Atucha II power plant has required the revision of this plan. However, no timeframe for the completion and Congressional approval of the revised plan or the implementation of the fund for Radioactive Waste Management and Disposal are provided in the report. Q. Can you provide an indication of timing for the finalising of the Strategic Plan and implementation of the fund for Radioactive Waste Management and Disposal? In the absence of the fund, what organisation will pay for the handling, treatment and disposal of legacy waste, i.e. waste with no current identified owner?		
Answer	Under the present circumstances, it is not possible to estimate the time that these decisions will demand. At present, the National Treasury -on the basis of a budget that CNEA prepares and that the National Congress annually approves- provides the funds for the management of the radioactive waste. In Argentina, there are no wastes such as "no current identified owner".		
Seq. No 24	Country Australia	Article Article 11	Ref. in National Report page K-6
Question/ Comment	It is noted that the development of the fund for Radioactive Waste Management and Disposal has been postponed because there is no law regulating its management and control. How is this deficiency being addressed?		
Answer	At present the National Treasury on the basis of a budget that CNEA prepares and that the National Congress annually approves, provides the funds for the management of the radioactive waste.		
Seq. No 25	Country Bulgaria	Article Article 11	Ref. in National Report
Question/	In what term is the creation of radioactive waste funds, including those for decommissioning of nuclear facilities, expected? Does your		

Comment	strategic plan include an estimate of the necessary financial resources and the schedule for their collection and spending? What is the present mechanism for finding of radioactive waste management?		
Answer	The Strategic Plan does not consider the funds for dismantling nuclear power plants but it does consider an estimation of the resources necessary for financing management of radioactive waste arising from NPP´s decommissioning. At present, the National Treasury on the basis of a budget that CNEA prepares and that the National Congress annually approves, provides the funds for the management of the radioactive waste.		
Seq. No 26	Country Ukraine	Article Article 11	Ref. in National Report H.1.2, ðage H-1
Question/ Comment	H.1.2, page H-1 H.1.3, page H-1 How is compliance with the ALARA ensured in management of radwaste? Could you provide examples of the requirements for the stage of radwaste management taking into account requirements for the subsequent stages? What additional measures have been implemented or planned in this context?		
Answer	The Regulatory Authority requires the operators to demonstrate that the management of radioactive waste is optimized. This implies that the operator has to analyze different options of radioactive waste management, selecting that one where the doses are as low as reasonable achievable taking social and economical factors into account. In doing the above mentioned analysis, only radioactive waste management options compatible with next stages are acceptable. As an example of interdependencies among the different steps in radioactive waste management, we can mention the requirements for the segregation and collection (physical state and rheologic characteristics, chemical composition, radionuclide types, activity concentration) based on the reduction of volume processes to be applied (concentration by evaporation, partition, compaction, dismantling); the conditioning requirements (drums of 200 L or 400 L, overpack, special containers, immobilization in special concrete matrix or special adsorbent) based on the fulfillment of transport regulations, conditions of storage and future final disposition. All these procedures have been established in written documents that are periodically reviewed with the purpose of adapting them to the present needs. NPP´s fulfillment of these conditions will facilitate future transport and final disposition of radioactive waste, in complete agreement with the National Atomic Energy Commission, application authority of the National Law on Radioactive Waste Management Regime (Act 25018/98).		
Seq. No	Country	Article	Ref. in National Report

27	Ukraine	Article 11	
Question/ Comment	H1.2, page 91 “Minimisation of radioactive waste generation” What are the results of the radwaste minimization policy for the recent years? What measures are the most effective for the radwaste generation minimisation?		
Answer	The policy applied to minimization of radioactive waste generation in both nuclear power stations in operation, CNA I and CNE, shows in the last five years a general and important trend to reduce the associated volumes. Regarding the most effective measures and considering that they differ according to the type of waste, the following ones are considered: Low level waste: This type of waste is conformed basically by compactable solids and cemented liquid wastes. The minimization measures in force are: Compactable solids: - to limit the entrance of packaging into the controlled zone. - to improve the preparation and standardization of the maintenance practices. - changes in attitude of the personnel in the use of consumer goods and protecting clothes. - recycling of elements for personal protection. - monitoring, characterization and segregation of collected waste. Cementable liquids: - to optimize handling operations and standardization of systems. - to avoid the use of steam in the conditioning of the working environment. - to prevent leaking and losses of components Intermediate level waste: Mechanical filters and ion exchange resins basically constitute this type of waste. The most effective measures in force are: - a correct maintenance of the system’s water parameters. - spent fuel fault rate as low as possible. NPP Spent Fuel: Both NPP in Argentina optimize the resources by means of efficient burning and a low fault rate of spent fuel.		

	Another factor contributing to waste minimization and optimization of natural resources was the change in the type of fuel used in CNA I. The original natural uranium core was totally replaced by slightly enriched uranium that allowed a roughly 50% reduction in spent fuel generation (from 1.3 SF/day to 0.7 SF/day). In the case of facilities whose Responsible Organization is CNEA**,** the most effective measures are: to implement training plans for generators, to evaluate jointly with them alternatives to the existing processes to minimize or eliminate waste generation, to improve the segregation procedures specially in the treatment of solid wastes. Some examples of the results of the Radwaste minimization policy for the recent years are: - Based on a previous R&D project performed to separate Cesium from the intermediate level waste stream of the Mo99 Production Plant, their implementation on line in the real process cell was made during 2004. - Cesium concentrate separated from the stream will be reused. In addition the resulting waste stream has a lower activity now and was re-classified, minimizing intermediate level waste volume. - The process in the Radioisotopes Production Plant for Iodine131 was optimized to obtain an effluent instead of a liquid waste. Till 2001 the resulting liquid waste stream of short lived radionuclide was managed by the Waste Management facility at the Ezeiza Atomic Center.

Seq. No 28	Country Ukraine	Article Article 11	Ref. in National Report
Question/ Comment	J3, page 110 “Actions aimed at making an appropriate control of disused radioactive sources” Is there the maximum period of time established for storage of the disused radioactive source by the licensee before its transfer to the facility managed by the CNEA?		
Answer	No. In case of disused sources and when there are higher probability of loss of sources control, the ARN requires the transference of the source to an authorized facility as soon as possible.		
Seq. No 29	Country Australia	Article Article 12	Ref. in National Report pages B-7 and H-8
Question/ Comment	The report states that in the AGE facility, very low-level liquid waste has been absored into soil beds to allow decay within the bed (page B-7 and H-8). Q Has this area of the facility been monitored to assess whether any migration of radionuclides has occurred? Has it been possible to limit the waste treated in this manner to short-lived radionuclides, or will the soil used in these beds require decontamination or special handling?		

Answer	a) This area is monitored monthly in order to measure total gamma activity. Throughout its operating life, samples taken from piezometers located downstream of the Low Level Radioactive Liquid Waste Management System showed results of gamma activity below the detection limits. b) Before 1995 some of the wastes disposed of (considered historic), contained small quantities of Cesium and Strontium. Since 1995, only wastes containing short-lived radionuclides were disposed of in this system. The necessity of decontamination or special handling of the soil used in these beds will be defined once the safety reassessment is concluded.		
Seq. No 30	Country Australia	Article Article 12	Ref. in National Report pages F-24 and B-8
Question/ Comment	There are no spent fuel and radioactive waste management facilities being decommissioned in Argentina. However, the AGE facility is no longer being used for disposal of wastes. Can you advise on the status of this facility and the safety arrangements for waste already in disposal areas?		
Answer	After thirty years of disposal activities in the AGE site and due to reasons mentioned in the First National Report, CNEA decided to suspend the disposal of solid wastes drums in 1999 and the disposal of liquid wastes in 2001. Those facilities dedicated to storage and to waste management are in operation. A site characterization project was formally initiated in 2003 to get enough information for the safety reassessment study with the conviction that all of the disposal facilities have fulfilled their operation stage. As it was mentioned before, depending on the conclusions achieved after the end of the environmental characterization of the AGE and the safety reassessment study, different alternatives of ensuring safety will be evaluated and proposed to the Regulatory Body to decide about the future actions.		
Seq. No 31	Country France	Article Article 12	Ref. in National Report Section H.2.4 P. H-8
Question/ Comment	Could Argentina provide information on the results of the safety re-evaluation of the "liquid sorbed" solution storage?		
Answer	CNEA is carrying out an environmental site characterization that requires plenty field data information to evaluate the present situation of the site and to model its future evolution in the ground water and soil. All this information will be used to reevaluate the safety of the site. Conclusions will be achieved at the end of the complete studies, so CNEA considers it is not convenient to provide partial information because it may conduct to wrong conclusions.		
Seq. No 32	Country France	Article Article 12	Ref. in National Report Section H.2.4 P. H8
Question/ Comment	Is there a re-evaluation study in progress related to the underground silos for disposal of structural solid radioactive waste and sealed sources? What are the main characteristics of the waste disposed of?		

Answer	a) Yes, these facilities are included in the re-evaluation study. b) Most of the wastes disposed of in these silos are solid wastes that couldn't be included in drums because of their form (structural wastes), and some disused sealed sources. These two underground silos were constructed as monolithic repositories with 30 cm of concrete wall.		
Seq. No 33	Country Germany	Article Article 12	Ref. in National Report p. H-4 to H-16 (H.2)
Question/ Comment	Are there no installations outside nuclear power plants and other installations of the nuclear fuel cycle (including U mining and milling) that would have to be regarded as "past practices" or "previous practices"?		
Answer	At present, there are not "past practices" in medical, research and industrial practices as the regulatory control started in Argentina in the early '50.		
Seq. No 34	Country United States of America	Article Article 12	Ref. in National Report H-8
Question/ Comment	The report discusses "three trenches having sand enhanced calcareous lime bed" which is apparently effective in attenuating migration of liquid radioactive material. What quantitative records demonstrate the effectiveness of the lime beds, e.g., through environmental monitoring?		
Answer	This area is monitored monthly in order to measure total gamma activity. Throughout its operating life, samples taken from piezometers located downstream of the Low Level Radioactive Liquid Waste Management System showed results of gamma activity below the detection limits.		
Seq. No 35	Country United States of America	Article Article 12	Ref. in National Report H-6
Question/ Comment	As stated the final disposal of low-level radioactive waste at the Ezeiza Radioactive Waste Management Area (AGE) is suspended, in part due to intensified rainfall in the area. The text indicates that the increased rainfall have raised the level of the groundwater, resulting in a concomitantly higher positive pressure that is being exerted by the underground aquifer. How has this affected the integrity of the facility and its ability to provide safe temporary storage for the medium-level wastes and disused sealed sources? As noted in the discussion of disposal system operation, an AGE safety-reassessment indicates that it is necessary to "improve the applied technologies." Please provide some information regarding specifically which applied technologies have to be improved and in what way they need to be improved.		
Answer	a) The AGE site is considered an installation that comprises different types of facilities. The one dedicated to safe temporary storage for wastes and disused sealed sources is a building known as "Deposit for Interim Storage of Radioactive Sources and Wastes", that is placed on the surface and cannot be affected by the raise of the level of the groundwater. b) The applied technologies that have been improved since 2003 are related with the environmental characterization project. Some		

	examples: 1. Some pump tests were made in the three aquifers and hydrological parameters were calculated. These new wells were constructed with materials and methodology of advanced technology, and now they are used for monitoring the aquifers. 2. New instruments were applied for sampling and measurement of environmental variables (continuous water level measurers., peristaltic pump for groundwater sampling, soil sampling drilling, multiparameter monitoring, etc) 3. Geophysical techniques were applied to study the stratigraphy of the site (georadar, resistivity measurements, vertical electric probe) 4. Implementation of the software Visual Modflow to simulate underground water flow and the transport of contaminants, incorporating the physical model established from the hydrogeological characterization

Seq. No 36	Country Australia	Article Article 15	Ref. in National Report page K-5
Question/ Comment	In August 2007, a final report of the safety assessment of the AGE should be submitted to the regulator. Is this work on schedule, and will the report consider decommissioning of some of the facilities at the AGE site?		
Answer	a) At present the work has a short delay. b) Depending on the conclusions achieved after the end of the environmental characterization of the AGE and the safety reassessment study, different alternatives will be evaluated and proposed to the Regulatory Body.		

Seq. No 37	Country Germany	Article Article 16	Ref. in National Report p. H-16
Question/ Comment	Although the safety criteria to be complied with when repositories are to be closed are described in Regulation AR.10.12.1, it would be helpful to provide a summary of these safety criteria so that they can be evaluated by the other countries having joined the JC.		
Answer	The safety criteria for final disposal of wastes were presented in the First National Report. A summary of the subject from the mentioned Report is provided below. The objective of AR 10.12.1 standard is to establish general requirements so that the management of disposable radioactive wastes is performed with an appropriate level of radiological protection of individuals and preservation of the environment for the present and future generations. Below follows a summary of these criteria. ***Dose constraints and risk restrictions*:** ARN radiological protection criteria applicable to the management of disposable radioactive waste is established in the Regulatory System. Specifically, criterion 18 of AR 10.12.1 regulatory standard establishes that radioactive waste management shall be performed in such a way that it ensures at the Regulatory Authority's satisfaction an acceptable level of radiological protection for workers, for the public and preservation of the environment. Thus, in the operation license (or the pertinent		

	one according to the stage of life of the installation) dose constraints imposed to the facility. The main objective is to ensure that the individual risks are below the appropriate levels (AR10.1.1 regulatory standard) and that the radiological impact remains as low as reasonable achievable (ALARA). ***Optimization of protection systems*:** Radiological protection systems used for radioactive waste management must be optimized considering the reduction of the effective dose, the cost of different feasible options of management, the uncertainties associated with long periods and as ultimate condition, dose constraints (criterion 20 of the mentioned standard). ***Responsibilities*:** A disposable radioactive waste management facility must have specific licenses granted by the ARN for each stage of the life of said facility (regulatory standard AR 0.0.1, criterion 18 and regulatory standard AR 10.1.1, criterion 47). Criteria for the final disposal of radioactive waste are based on the fact that disposable wastes shall not undergo further treatment or their further use is not under consideration (regulatory standard AR 10.12.1, criterion 29). Operators may delegate disposable waste management but cannot transfer their responsibilities (regulatory standard AR 10.12.1, criterion 28). ***Solid wastes*:** The final disposal of solid radioactive wastes may be made using, if appropriate, a multiple barrier system (regulatory standard AR 10.12.1, criterion 19). Said barriers shall be adequate for the confinement period required, and are composed by natural geological barriers and engineered barriers, which shall be redundant, independent and of different kinds (regulatory standard AR 10.12.1, criterion 5). The closure of a final disposal system for radioactive wastes or any associated system to such facility, shall have ARN prior authorization (regulatory standard AR 10.12.1, criterion 36). The operator of the facility shall be held liable until the final stages of closure, pos-closure and institutional control during the period established by the ARN (regulatory standard AR 10.12.1, criterion 37). When the Responsible Organization applies for the construction and operation licenses it shall provide evidence that the system may be satisfactorily closed and that during the period after the closure it shall have appropriate safety systems (included in regulatory standard AR 10.12.1, criterion 30). ***Safety assessment of disposal systems:*** Safety assessment of final disposal systems shall cover the design, construction and operation stages, as well as their condition after closure and their future evolution. Several types of scenarios should be considered, among them: the *standard evolution* (considering an average degradation of the system) *and incidental or accidental scenarios* (as a result of possible disruptive scenarios). (AR 10.12.1, criteria 30 to 33). ***Information to be supplied to the Nuclear Regulatory Authority*:** The responsible organization for the installation that generates the disposable wastes or for the waste disposal facility shall keep an updated inventory of the wastes disposed during the operative stage. (Criteria 27 and 35). Furthermore, the license request that previously to complete the operational phase of the facility the Responsible Organization shall

	present to the ARN, with due time for their analysis and eventual approval, the closure plan of the disposal system. In this plan, the institutional control period should be established.		
Seq. No 38	Country Hungary	Article Article 16	Ref. in National Report H.2.4, p. H-7
Question/ Comment	What is the planned storage/disposal capacity of the various rw management systems in the Ezeiza Radioactive Waste Management Area? Is there any upper limit of the total activity of the Area?		
Answer	The planned storage/disposal capacity of the facilities was informed in detail in the First National Report. (see Section H.2). The Operation License establishes the activity limits for each disposal system of the AGE facility.		
Seq. No 39	Country Hungary	Article Article 16	Ref. in National Report F.4.1, p. F-12
Question/ Comment	What are the criteria for the segregation of solid waste? Is the procedure of clearance (levels, etc.) regulated?		
Answer	The main criteria are the separation in different types of wastes: compressible, not compressible (structural components, filters), biological and sludge. The segregation criteria are agreed between the waste generator and the Radioactive Waste Management Responsible Organization (RWMO- CNEA). The Regulatory Authority does not establish clearance levels for release radioactive material from regulatory control, but exemption levels. AR 10.1.1 Radiological Safety Standard sets exemption criteria that could be used for withdrawal radioactive material from regulatory control. As provided in this standard, the effective dose constraint value for exemption is 10 μSv/year for most exposed individuals and 1 man-Sv/year as an effective collective dose value.		
Seq. No 40	Country United States of America	Article Article 17	Ref. in National Report 25
Question/ Comment	It is stated that for a Class M (Intermediate Level) waste repository the model considers the application of 300 years of institutional post-closure control. Please describe the types of controls considered.		
Answer	The safety criteria applied for the post-closure stage were established by the Criteria 19 and 30 through 34 of the Regulatory Standard AR-10.12.1. The main type of institutional post-closure measures considered are access and use restrictions of the site and environmental monitoring.		

	As stated in the Regulatory Standard AR-10.12.1 criterion 37, the Responsible Organization shall be responsible for the safety including institutional controls, during all post-closure period.		
Seq. No 41	Country Australia	Article Article 19	Ref. in National Report page A-1
Question/ Comment	The report notes the existence of a number of provincial and municipal regulations that can have a significant impact on management activities. How are the different areas of government organised and how are their inputs integrated into the regulatory process?		
Answer	The attributions of each level of government are constitutionally differentiated. Argentina is a federal country and the provinces maintain all the powers not delegated to the federal government. Radiological safety aspects of radioactive waste management are attributions and duties of the Federal Government, being the ARN, the National Regulatory Authority. The licenses issued by ARN deal with radiation protection, nuclear safety, physical protection and safeguards, as they are applicable. A clause in the licenses issued by ARN makes clear that the Responsible Organization shall also comply with the regulatory standards and requirements of other competent authorities, national, provincial or municipal, that are not related to nuclear activities.		
Seq. No 42	Country France	Article Article 19	Ref. in National Report Section E.2.2.2 P E5
Question/ Comment	Could Argentina provide information on the licensing process related to liquid or gaseous releases? Are the release authorizations re-defined after each re-assessment at regular intervals?		
Answer	The licensing process related to liquid or gaseous releases takes into account: justification of the releases, dose constraint and the optimization criteria, isotopic composition and activity of releases, application of the a dose assessment specific model appropriate to the site. The authorized values are re-assessed in each license renewal.		
Seq. No 43	Country Japan	Article Article 19	Ref. in National Report Sec.E, L6
Question/ Comment	In regard of securing effective independence of the regulatory body, what kind of measures have been taken other than creation of independent regulatory body, ENREN?		
Answer	Regarding an effective independence of the Regulatory Body, technical and economical resources have been provided to carry out independent safety reviews and assessments.		
Seq. No 44	Country Japan	Article Article 19	Ref. in National Report Sec.E6, L28
Question/	The Responsible Organization submits to ARN documents including Safety Report, Probabilistic Safety Assessment, etc.		

Comment	Does the Probabilistic Safety Assessment provide quantitative and prescriptive information? Or, does it provide qualitative information, supplementary to the Safety Report?		
Answer	Analysis of the results of PSA leads to the assessment of the relative importance of the various systems, components as well as operational and maintenance procedures. These PSA results can be used to quantify the relative importance of backfitting options or design modifications in terms of their potential for increasing safety and also provide a way of deciding which modifications should be made.		
Seq. No 45	Country Latvia	Article Article 19	Ref. in National Report E.3.3.4
Question/ Comment	Development of Quality Control System including accreditation under ISO 17025 and certification of postgraduate courses could be recognised as good practice.		
Answer	We are grateful for the compliment.		
Seq. No 46	Country Ukraine	Article Article 19	Ref. in National Report
Question/ Comment	E.2.2.1, page E-4 (§ 2) E.2.2.2, page E-5 E.2.2.4.2, page E-7 What physical protection activities are subject to licensing by the ARN? What is a period established for safety verification of dry storage facilities for spent fuel? Are there special inspectors on physical protection among the resident inspectors at nuclear installations?		
Answer	Regulatory Standards set criteria to avoid third party malevolent actions (i.e. security checks, physical barriers). The dry storage facility for spent fuel is part at the NPP site, so physical protection is included in the inspection plan of the NPP. The Regulatory Authority has inspectors specialized in Physical Protection, that are not residents.		
Seq. No 47	Country Ukraine	Article Article 19	Ref. in National Report
Question/ Comment	F6.4, page 81 “Though there is no specific date on which any relevant nuclear installation in Argentina shall end its operation activities, the SPDIN has started planning their dismantling and decommissioning, prioritising the installations which shall generate the greater volume of		

	radioactive waste during decommissioning” Does the legislation identify the period of time prior to closure of a nuclear installation during which such a decision shall be made? During which period of time before closure of a nuclear installation shall a decommissioning program/plan be approved?		
Answer	In 2003 the validity of the licenses were modified from an indefinite period of time to a restricted time validity, usually ten years. Such change includes the requirement to present the “Preliminary Plan of Decommissioning” of the facility as part of the Mandatory Documentation required to renew the license. The Final Decommissioning Plan have to be presented at least one year before the expected end of operations.		
Seq. No 48	Country Bulgaria	Article Article 20	Ref. in National Report E.3.2
Question/ Comment	What is the procedure for appointment and release of the head of the regulatory body? What are the legal provisions that ensure his / her independence?		
Answer	The members of the Board of Directors of ARN, including its president, are designated by the head of the Executive Power (National President).		
Seq. No 49	Country Hungary	Article Article 20	Ref. in National Report E.3.1 Section E-9
Question/ Comment	What is the relationship between the health authority and ARN in the field of radiation protection?		
Answer	The ARN controls the nuclear activities, and medical applications of radioactive material and ionizing radiation with the exception of X Rays where the authority is the Ministry of Health. Both organizations work in close co-operation.		
Seq. No 50	Country United States of America	Article Article 20	Ref. in National Report E-12
Question/ Comment	Please elaborate on the training programs for technicians within CNEA.		
Answer	“On the job training” is the main training given to CNEA technicians, engineers and scientists. Training is also carried out in laboratories abroad, generally with the support of IAEA. Also, CNEA and the Regulatory Body in association with national universities organize post grade courses that include some studies in radioactive waste and spent fuels management, as well as to the radiological safety. Other studies and courses that do not deal specifically with these subjects are equally useful for the training of scientists and technicians. The following are post grade studies that contribute to this purpose: ▪ “Technological Applications of Nuclear Energy”, CNEA - Balseiro Institute - Universidad Nacional de Cuyo – Universidad de Buenos Aires.		

	▪ "Radiological Protection and Safety of Radiation Sources" – Universidad de Buenos Aires. ▪ "Nuclear Safety" - ARN – Universidad de Buenos Aires. ▪ "Master in Radiochemistry" - CNEA - Universidad Tecnológica Nacional.		
Seq. No 51	Country Japan	Article Article 21	Ref. in National Report Sec.F1, L25
Question/ Comment	Could you explain more about the Responsible Organization? Is NASA the Responsible Organization, the operating organization and the license holder of nuclear power plants, concurrently? Is CNEA the Responsible Organization, the operating organization and the license holder of AGE's facilities, CAE's plant and several research reactors, concurrently?		
Answer	ARN requires for each facility the identification of the Responsible Organization, the Primary Responsible and the key safety positions where a personal license is needed. Responsible Organization and Operating Organization are the same. The Responsible Organization applies for a license to the Argentinean Nuclear Regulatory Authority and it is issued once all the pertinent regulatory requirements applicable to construction[1], commissioning, operation or decommissioning is fulfilled. The Responsible Organization shall designate a Primary Responsible for each facility, who will be the direct responsible of the radiological and nuclear safety, as well as for compliance with the license, standards and requirements. The Responsible Organization shall give to the Primary Responsible all the necessary support and perform the appropriate supervision to guarantee that the facility will operate in safe conditions, according to the operation license requirements. NA-SA is the Responsible Organization for nuclear power plants, and the Directors of CNA-I and CNE are the respective Primary Responsibles. CNEA is the Responsible Organization for research reactors and other radioactive facilities (including AGE), located at the Ezeiza Atomic Center, Constituyentes Atomic Center and Bariloche Atomic Center. For each facility there is a Primary Responsible who is the direct responsible for radiological and nuclear safety. [1] Site and design are part of the construction license		
Seq. No 52	Country Hungary	Article Article 22	Ref. in National Report F.2,p.F-4

Question/ Comment	How will the planned Fund for rw management and final disposal work? How is currently the Ezeiza Radioactive Waste Management Area financed?		
Answer	The fund implementation and administration are still pending decisions. At present, the funds for radioactive waste management, which include the Ezeiza Radioactive Waste Management Area, are provided by the National Treasury based on a budget that CNEA prepares and that the National Congress annually approves.		
Seq. No 53	Country United States of America	Article Article 22	Ref. in National Report F-3
Question/ Comment	How does the CNEA ensure licensee safety personnel are available and properly trained?		
Answer	The following measures are taken by CNEA to select and to train the licensed safety personnel: 1. Establishing suitable profiles for each specified function within the Organic Structure. 2. Establishing clearly missions, functions and responsibilities of each post. 3. Fulfilling with the ARN requirements on the matter. These requirements are available in www.arn.gov.ar and are: - AR 0.11.1. Rev. 3 "Licensing of Class I facilities' personnel" - AR 0.11.2. Rev. 2 "Psychophysical aptitude requirements for specific authorizations" - AR 0.11.3. Rev. 1 "Re-training of Class I facilities personnel". 4. CNEA as the Responsible Organization must ensure the fulfillment of the regulatory standards and must therefore also evaluate, by means of MD(*), the personnel's psychophysical aptitude. **(*) MD: An organization appointed by the responsible organization and recognized by ARN that must have sufficient professional support for establishing psychophysical profiles of specified functions and evaluating psychophysical aptitude of applicants**		
Seq. No 54	Country Latvia	Article Article 23	Ref. in National Report E.3.4
Question/ Comment	"2003 the ARN participated in a joint activity of the Latin American Forum and the IAEA, held in the city of Montevideo (Republic of Uruguay), to promote the adherence to the Joint Convention among the countries of the region."		

	Such efforts shall be recognised as a good practice		
Answer	We are grateful for the compliment.		
Seq. No 55	Country Australia	Article Article 24	Ref. in National Report page F-16
Question/ Comment	The average data for occupational exposures at facilities is of interest. It would be useful if there was a further analysis of this data to explain what activities have been undertaken to reduce doses. In addition, where annual doses vary, the role of special activities and maintenance could be investigated to explain these deviations.		
Answer	The analysis of the relationship between incurred doses and associated activities, is a continues task for operators as well as regulators. With the objective to improve the radiological protection of such activities, work procedures have been changed in many opportunities as a consequence of these analysis.		
Seq. No 56	Country Hungary	Article Article 24	Ref. in National Report H.2.4, p. H-7
Question/ Comment	How do you monitor the environment of the Ezeiza Radioactive Waste Management Area?		
Answer	ARN performs a periodic environmental monitoring around the area that consists in collecting and analyzing samples from surface and phreatic water, sediments and soils.		
Seq. No 57	Country Hungary	Article Article 24	Ref. in National Report F.4. Section F-12
Question/ Comment	What is the reason for the different dose limitations in the cases of nuclear power plants, research reactors and radioactive facilities Type 1?		
Answer	The philosophy to establish different constraints for collective dose by unit of practice is described in the paper: Beninson, D.; “Limitation of future radiation exposures from the present operation of nuclear fuel cycle installations”, International Symposium on the application of the dose limitation system in nuclear fuel cycle facilities and other radiation practices, Madrid 19-23 October 1981 – IAEA-SM-258/52		
Seq. No 58	Country Japan	Article Article 24	Ref. in National Report Sec.F12, L8
Question/ Comment	The report indicated 15 Sv man by GW year, 5 Sv man by GW year, and 1.5 Sv man by TBq year, as the effective collective dose constraints in different cases. Could you indicate any international reference documents?		

Answer	Beninson, D.: “Limitation of future radiation exposures from the present operation of nuclear fuel cycle installations”, International Symposium on the application of the dose limitation system in nuclear fuel cycle facilities and other radiation practices, Madrid 19-23 October 1981 – IAEA-SM-258/52		
Seq. No 59	Country Japan	Article Article 24	Ref. in National Report Sec.F16, Table8
Question/ Comment	The annual average individual dose and collective dose of Atucha I Nuclear Power Plant in the period of 2000 to 2004 seems rather high. Are there any particular reasons?		
Answer	The occupational annual average individual doses and collective doses of the Table 8 on page F16 are the resulting doses of the personnel of each facility and not the incurred doses in radioactive waste or spent fuel management activities by personnel of such facilities. In the case of CNA I, the activities performed in the reactor internals, in particular the total replacement of cooling channels containing Stellite and modification of the foil thickness of heat barrier, the change of guide tubes of control rods, replacement of temperature, flow and level probes, during the backfitting program, produced an important increase in the annual average individual doses and annual collective doses during the period 1999-2002. After this period, these values decreased reaching the lowest ones, but the annual averages for the period 2000-2004 remain high.		
Seq. No 60	Country Ukraine	Article Article 24	Ref. in National Report F.4.1, page F-11
Question/ Comment	How the collective dose to the critical group of the public is monitored in practice? Does the cost estimate of 1 man-Sievert depend on the current socio-economic conditions in the country? Is there a methodology for calculating such dependence? If so, can you provide an appropriate reference?		
Answer	The doses incurred by the critical group and the collective doses are evaluated through the monitoring of the releases and the use of specific dose assessment models. The cost estimate of 1 man-Sievert was set by the Regulatory Authority taking into account the socio-economic conditions of the country. The methodology used for this setting may be found in the IAEA Safety Series Nº 67, “Assigning a Value to Trans-boundary Radiation Exposure”, (1985).		
Seq. No 61	Country Ukraine	Article Article 25	Ref. in National Report F.5.2, page F-19
Question/ Comment	Is there an emergency centre in the regulatory authority? If so, does it participate in NPP emergency training?		

Answer	Yes, there is an Emergency Center in the Regulatory Authority (ARN). It is placed in Buenos Aires city. This center participate in the NPP emergency training and also, in the design and development of the emergency exercises.		
Seq. No 62	Country Ukraine	Article Article 25	Ref. in National Report Section F-21
Question/ Comment	It is stated that abnormal situations are to be rated in one of three levels of emergency – from Level I to Level III. Are there any plans to use emergency classification set in the IAEA safety requirements GS-R-2 “Preparedness and Response for a Nuclear or Radiological Emergency”?		
Answer	There are not plans to directly use such classification. However, the domestic classification in use is coherent with the one proposed in the IAEA-GS-R-2.		
Seq. No 63	Country France	Article Article 26	Ref. in National Report Section F.6.2 P. F24
Question/ Comment	Could Argentina provide information on the status of the regulatory framework associated to licensing process related to dismantling activities (content of the documents, reviews, authorizations)?		
Answer	In 2003 the validity of the licenses were modified from an indefinite period of time to a restricted time validity. Such change includes the requirement to present the “Preliminary Plan of Decommissioning” of the facility as part of the Mandatory Documentation required to renew the license. The Final Decommissioning Plan have to be presented at least one year before the expected end of operation.		
Seq. No 64	Country Japan	Article Article 26	Ref. in National Report Sec.F26, L22
Question/ Comment	Four decommissioning plans are described in the report. Do the plans include environmental impact assessment during the normal or accidental situation of decommissioning activities?		
Answer	The plans take into account the assessment of the environmental impact in both, normal and accidental situations.		
Seq. No 65	Country Japan	Article Article 26	Ref. in National Report Sec.F27, L11
Question/ Comment	Could you indicate any published English documents on the project of vibratory mechanical decontamination?		
Answer	A document in the subject has not been published yet.		
Seq. No 66	Country Ukraine	Article Article 26	Ref. in National Report F.6.6, page F-27
Question/	How is the Trust Fund for Decommissioning managed and monitored and how are appropriate responsibilities allocated?		

Comment			
Answer	Up to day there is not any mechanism to get funds for decommissioning activities. The National Atomic Energy Commission is evaluating different alternatives.		
Seq. No 67	Country United States of America	Article Article 26	Ref. in National Report 24
Question/ Comment	The report does not address record keeping for information important to decommissioning. Please elaborate.		
Answer	Works have started with RA-1 research reactor at Constituyentes Atomic Center. They include the collection of all the information which was recorded during the operation, design modifications, radiological characterization and a first estimate of the radioactive waste involved in its dismantling. The same approach will be applied also to other nuclear facilities.		
Seq. No 68	Country Australia	Article Article 27	Ref. in National Report
Question/ Comment	What laws and administrative arrangements has your country put in place to address the authorised transboundary movement of spent fuel and radioactive waste under Article 27.1.(1)H of the Convention .		
Answer	Our laws and regulations request that any person who intends to import or export radioactive materials shall obtain first a permit or authorization from the Nuclear Regulatory Authority (ARN). By virtue of an administrative procedure between ARN and Customs, no radioactive material could entry or exit the country without the prior intervention of ARN. The ARN export or import authorization is part of the mandatory documentation that exporters and importers must provide to the Customs. This is one of the domestic arrangements in place towards ensuring an effective control of the imports and exports of radioactive materials. In addition to that, when nuclear material is involved in any international transfer our laws require the issuing of an export control license, among other requirements derived from the non-proliferation commitments undertaken by Argentina. In particular, Argentina has enforced through the Executive Decree nº 603/92 dated April 9 1992, a strict control over the transfers of materials, equipment, technology, technical assistance and services of nuclear or nuclear related nature. To this end, this Executive Decree has established the National Commission for the Control of Sensitive Exports (CONCESYMB), which is the national authority responsible for applying the export control regime in force. The Ministries of Foreign Affairs, Finance and Public Services and Defense compose the CONCESYMB as permanent members and the ARN as the fourth member in the case of nuclear transfers.		

	In the case of an export of nuclear material, it is obligatory to obtain an export license from the CONCESYMB. Each request is analyzed on a case-by-case basis. The decisions take due account of the commitments undertaken by Argentina in all relevant international treaties such as the Joint Convention and the treaties related to nuclear non proliferation as well as the international conditions and conditions specific for each concrete case. Argentine legislation incorporates to the national legal system the international criteria on these matters, having adopted in particular the standards established by the Nuclear Suppliers Group (NSG).		
Seq. No 69	Country Bulgaria	Article Article 28	Ref. in National Report
Question/ Comment	What steps are planned for future management of the disused sealed sources now stored in the Ezeiza facility?		
Answer	In principle, is to apply the management strategy described in the IAEA-TECDOC-1145. Sources containing radionuclides with short half-life: Storage for decay. Sources containing Co-60 and Cs-137: Can be used to make new sources. Sources containing Sr-90: Could be used to obtain Y-90. Any other source: Storage for conditioning and disposal.		
Seq. No 70	Country Germany	Article Article 28	Ref. in National Report p. J-2 to J-4 (J.)
Question/ Comment	In addition to the control measures described, do the authorities carry out inspections during which the physical locations of sources are checked?		
Answer	Yes, ARN carry out inspections and one of the aspects that is checked is related to the physical location of the sources.		
Seq. No 71	Country United States of America	Article Article 28	Ref. in National Report J-3
Question/ Comment	Section J.5 states that ARN promotes the use of radiation monitors at border crossings and ports to prevent the illicit trafficking of radioactive sources, detect orphan sources and avoid the import of materials contaminated with radioactive substances. Please explain how the program for border protection, including radiation monitoring of exports precludes the inadvertent disposal of sources in shipments (e.g., scrap metal) that could result in the possible import by other countries and/or re-import of contaminated materials. Please describe the program for border protection, including radiation monitoring at airports.		
Answer	In the framework of the agreement between the Argentinean Customs and ARN, the latter organizes courses to Custom officers an members of security forces aimed at training them to identify potential events of illicit trafficking of radioactive material. Nowadays,		

	more than 1100 custom officers and members of the national security forces (Gendarmería Nacional, Prefectura, Policía) were trained in these courses. Having in mind the increasing problem of inadvertent movement of radioactive materials or their illicit trafficking at borders, in addition to the training Customs and other relevant officials and other activities, the installation of radiation detection equipment at terrestrial border checkpoints (fixed and portable radiation detectors) has been promoted and discussed. In addition, Argentina has been actively participating in the international cooperative efforts to prevent and detect inadvertent movements of radioactive materials worldwide within the framework of the IAEA and through its participation in bilateral cooperation programs. An example of the latter is the future implementation of the "Megaport Initiative" in the Port of Buenos Aires and the cooperation on the "International Threat Reduction Program" through its involvement in the radiological security partnership with the IAEA.		
Seq. No 72	Country Bulgaria	Article Article 32	Ref. in National Report
Question/ Comment	How were the quotas of the collective effective dose "15 Sv man by GW year", "5 Sv man by GW year" and "1,5 Sv man by TBq" determined?		
Answer	The different magnitude of the facilities and units of practice influenced in the determination of different collective effective dose constraints. As a reference, may be mentioned: Beninson, D.: "Limitation of future radiation exposures from the present operation of nuclear fuel cycle installations", International Symposium on the application of the dose limitation system in nuclear fuel cycle facilities and other radiation practices, Madrid 19-23 October 1981 – IAEA-SM-258/52.		
Seq. No 73	Country Bulgaria	Article Article 32	Ref. in National Report
Question/ Comment	What is the number of the facilities and the sites (operational and closed) of the uranium mining and milling industry? What are your national arrangements regarding the regulatory control over materials with elevated concentrations of naturally-occurring radionuclides, that can not be neglected from the point of view of the radiation protection?		
Answer	Uranium mining and milling industry started up in Argentina in the early 50`s. There are 8 sites in total where these activities were developed. At present 7 sites are closed or in process of being closed. There is one site that is now temporarily out of operation. The National Regulatory Authority, ARN, has competence in the control of uranium tails. The control of other NORM is beyond of the scope of this Convention.		
Seq. No 74	Country France	Article Article 32	Ref. in National Report Section A Page A-2

Question/ Comment	Many references are associated in the text to the Strategic Plan. But it is written that, to date, the Strategic Plan has not been enacted as required by Act 25018. What is the current effectiveness of the implementation of the different aspects of the Strategic Plan?		
Answer	CNEA is legally empowered to carry out all the actions planned in the Strategic Plan and, moreover, it is its responsibility to make radioactive waste management effective. Therefore, with the limitations imposed by the lack of integration of the fund required by Law 25018, Art. 13, CNEA carry out the actions to fulfill the Strategic Plan objectives.		
Seq. No 75	Country France	Article Article 32	Ref. in National Report Section B Page B-5
Question/ Comment	Could Argentina provide the applied exemption criteria for waste, corresponding quantities and related procedures?		
Answer	The National Report presents the criteria applied to the exemption from regulatory control: "*The Regulatory Authority sets the acceptable doses for the release from regulatory control in accordance with the exemption criteria. As provided in AR 10.1.1. Radiological Safety Standard, the effective dose constraint value for exemption is 10 µSv/year for the most exposed individuals to radiation and 1Sv man/year as an effective collective dose value."* This requirement is applied on a case-by-case basis to waste exemption considering specific scenarios and models. There are not pre-established activity values for exemption.		
Seq. No 76	Country Germany	Article Article 32	Ref. in National Report p. B-8 (B.4.3)
Question/ Comment	The radioactive waste of class M (intermediate level waste) is stored in specially designed facilities. What are the most important incidents and damage cases regarding the long-term storage of these wastes, and what measures have been taken against these incidents and damage cases? When will the planned repository probably be available?		
Answer	There is no registered incident up to date. As it is mentioned in the K-3 Section, the repository for waste class M will be probably available by 2020.		
Seq. No 77	Country Germany	Article Article 32	Ref. in National Report p. B-8 (B.4.3)
Question/ Comment	Since the repository for class A waste (high-level and/or long-lived waste) will not be operational in the near future (see K.3.1), the long-lived intermediate level waste will be in temporary storage for longer terms. What strategies are applied to ensure the integrity of the waste packages for the long-term interim storage of these wastes? What criteria are applied for waste conditioning?		
Answer	Long lived intermediate level waste is constituted mainly by needles of Ra-226, encapsulated and shielded with lead. In these		

	conditions the sources may be stored several decades.		
Seq. No 78	Country Germany	Article Article 32	Ref. in National Report p. D-3 to D-5 (D.4)
Question/ Comment	Are there no materials from past practices (outside the nuclear fuel cycle), or have no such practices taken place in Argentina?		
Answer	At present, there are not “past practices” in medical, research and industrial practices as the regulatory control started in Argentina in the early ’50.		
Seq. No 79	Country Japan	Article Article 32	Ref. in National Report p.A-2, L11,34
Question/ Comment	The report indicated that the Strategic Plan has not been enacted, and the Strategic Plan covers from 2003 to 2076. Has this Strategic Plan been authorized by the National Congress after the submittal of this report?		
Answer	As it is indicated in the National Report, the Strategic Plan is being revised and the new version will be submitted to the National Congress, once agreed upon by the Executive Power.		
Seq. No 80	Country Japan	Article Article 32	Ref. in National Report p.B-2, L2
Question/ Comment	The report says that for the remaining low enriched (20%) SF, an initial cooling stage in a water pool is planned and the SF will later be moved to a dry storage, until their destination is decided. Which numbers in Section D.2 represent the quantity of remaining low enriched SF from research and production reactor?		
Answer	Please, see Table D.2.3		
Seq. No 81	Country Japan	Article Article 32	Ref. in National Report Sec.B4,L6
Question/ Comment	The report indicated that the effective constraint value for exemption is 1 Sv man/year as an effective collective dose value. Could you explain what scope of population is considered in assessment of collective dose?		
Answer	The world population.		
Seq. No 82	Country Japan	Article Article 32	Ref. in National Report Sec.B7, L9
Question/ Comment	The report indicated that specific written procedures are followed which meet the waste acceptance requirements laid down by the RWMRO. Are the waste acceptance requirements laid down by the RWMRO parts of national regulation?		

	Did the ARN authorize the requirements laid down by the RWMRO?		
Answer	The waste acceptance procedures laid down by the Radioactive Waste Management Responsible Organization (RWMO- CNEA) are not part of the national regulation. The criteria and methodology of radioactive waste transfer between waste generators and RWMO are submitted to the ARN to obtain the appropriate license or authorization.		
Seq. No 83	Country Japan	Article Article 32	Ref. in National Report page D-1
Question/ Comment	What is the unit of QUANTITY in Tables D.2.1 and D.2.2? Fuel assembly, or fuel rod? What is the definition of the word "position" in Section G.2.1? Position for fuel assembly, or fuel rod?		
Answer	In both instances, either “QUANTITY” or “position” refer to fuel assembly.		
Seq. No 84	Country Korea, Republic of	Article Article 32	Ref. in National Report SECTIOND-4
Question/ Comment	What is the method for storage of non-conditioned solid wastes and structural wastes?		
Answer	*Non -conditioned waste* as mentioned in tables D.4.1 and D.4.2 (radioactive waste inventories of NPP Atucha I and Embalse respectively) in Section D of Second National Report, are those wastes that will be conditioned by compaction in 200 dm3 drums. As far as structural wastes are concerned, the storage concept applied depends on the type of structural waste or its classification: *Low level structural waste*: CNA I - Drums or containers for waste of reduced mass and volume. - Storage for waste of substantial mass and volume. CNE - Concrete cubicles with lids *Intermediate and high level structural waste*: CNA I		

	These wastes are stored in SF water pools or in special pools adjacent to the reactor’s enclosure. (These structural wastes are constituted mainly by reactor’s internal replaced cooling channels, measurement probes, control rods, shroud box and structural parts of metallurgical test specimens, etc.). CNE - Underground concrete silos, with inner steel liner.		
Seq. No 85	Country Korea, Republic of	Article Article 32	Ref. in National Report SECTIOND-4
Question/ Comment	What is the method applied to reduce volume of filters and pre-filters ?		
Answer	The method applied to reduce the volume of filters and pre-filters in the Cordoba Manufacturing Complex follow the steps shown in the attached drawing.		
Seq. No 86	Country Ukraine	Article Article 32	Ref. in National Report Section B.1, page B-
Question/ Comment	Section B.1, page B-1 Â.2, page B-2 Does the selected strategy for long-term storage of spent fuel take into account the possibility of its further processing if Argentina makes an appropriate decision?		
Answer	Yes, it does take it into account.		
Seq. No 87	Country Ukraine	Article Article 32	Ref. in National Report Â.2, page Â-2
Question/ Comment	What is the current status of creating the dry storage facility for low-enriched spent fuel from research reactors (development, design, construction etc.)?		
Answer	Is in the stage of developing the conceptual design.		
Seq. No 88	Country Ukraine	Article Article 32	Ref. in National Report B.3 , ðage Â-3
Question/ Comment	What measures have been implemented under the National Radioactive Waste Management Program and Strategic Plan, such as: - selection of the most acceptable technical decisions for managing radwaste of different types; - technical modifications of radwaste management systems in order to optimise technological aspects of waste handling;		

	- identification of processing procedures and technologies and systems for ultimate disposal of radwaste of all types; - identification of facilities required for ultimate disposal?		
Answer	In general terms, the ICRP and IAEA recommendations are followed. Most of the solutions have been described in the National Report, as well as the identification of the facilities required for final disposition. Adopted measures are reviewed and if necessary, revised according to the state-of-the-art.		
Seq. No 89	Country Ukraine	Article Article 32	Ref. in National Report
Question/ Comment	В.4.3, рages В-6– B-9 What restrictions have been imposed on the storage periods for liquid and solid intermediate-level waste of class M “Disposable Radioactive Waste (Intermediate Level)” and for high-level and/or long-lived waste of class A “Disposable Waste (High Level and/or Long Lived)”, how are these periods justified (scientific, technical, economic basis, etc.) and how are they coordinated with the schedules for commissioning radwaste disposal facilities? Is Argentina going to adopt the IAEA classification?		
Answer	The answer is related to the descriptions on pages B-8 and B-9. Class “M” disposable waste is safely stored in special facilities, properly monitored, awaiting treatment and conditioning. Most of it is solid waste. In the case of spent ion exchange resins beds, they are going to be immobilized in cement matrices and then safely stored awaiting the availability of the repository for disposal. It is planned that the repository will be available by the year 2020. The strategy for Class “A” disposal waste is described on pages B-1, B-2, B-8 and B-9. The SF or the HLW from reprocessing (if that were the decision) are going to be in interim dry storage awaiting the availability of the geological repository for disposal. It is planned that the repository will be available by the year 2050. There is no decision on the adoption of the IAEA classification.		
Seq. No 90	Country United States of America	Article Article 32	Ref. in National Report A-2
Question/ Comment	The requirement for Argentina’s Strategic Plan is included in Act 25018 (1998). The Second National Report states the Strategic Plan has not been enacted. Yet, Argentina has embarked on a strategy for managing most spent fuel and radioactive waste. Some strategies have been implemented and others await future decisions. This Strategic Plan must be updated every three years. Please describe the strategic planning process and whether there is an “approved” version as a basis for current policy and practice.		
Answer	CNEA has been managing the radioactive waste generated in the country since the 1960´s. Such activities have been performed in compliance with the regulatory requirements and according to the state of the art at each moment, following, in general, the		

	recommendations of the IAEA. In such a way, the procedures and strategy for managing the spent fuel and radioactive waste have been developed along the years and were used to develop the Strategic Plan required by the Act 25018 of the year 1998. These management procedures and strategy are the basis for current policy and practice.		
Seq. No 91	Country United States of America	Article Article 32	Ref. in National Report
Question/ Comment	The Strategic Plan and other referenced documents are apparently not publicly available. Please describe how documents are made available to the public and other interested individuals and organizations.		
Answer	The Strategic Plan will be available to the public once approved . In the CNEA website, www.cnea.gov.ar, the Report on the Management of the Radioactive Waste and Spent Fuels that is presented annually to the National Congress is available, as well as the National Reports to the Joint Convention.		
Seq. No 92	Country United States of America	Article Article 32	Ref. in National Report B-1
Question/ Comment	The strategy for managing spent fuel from research and production reactors includes shipping it back to the country of origin or where enrichment occurred, or conditioning for final disposal. Please describe conditioning plans or techniques being considered beyond pool storage (such as FACIRI).		
Answer	Several techniques are considered for conditioning of aluminum-clad research reactor spent fuel: Wet processing (Classical route): Dissolution in sodium hydroxide + isotopic dilution + calcinations/oxidation + vitrification. As an alternative, we are considering the possibility of U separation to avoid the step of isotopic dilution and the corresponding volume increase. Dry processing-1 (HALOX Process): Dissolution with chlorine gas + isotopic dilution + precipitation + calcinations/oxidation + vitrification. Dry processing-2 (CERUS Process): Bulk oxidation + isotopic dilution + Oxide sintering. Dry processing-3 (Melt and Dilute): Bulk melting + isotopic dilution + adjust to eutectic composition + casting.		
Seq. No 93	Country United States of America	Article Article 32	Ref. in National Report B-8
Question/ Comment	Argentina has established the need for its own deep geologic repository. Additional information was provided in response to questions on the first National Report. How has this work progressed since 2003?		
Answer	The answer is in Section K-3: “Deep Geological Repository”		
Seq. No 94	Country United States of America	Article Article 32	Ref. in National Report B-3

Question/ Comment	Public communication and information are essential elements of Argentina's waste management policy. Please describe the key issues from public interactions, and if possible, some of the proposed solutions or resolutions.		
Answer	Public communication policy is highly important for CNEA and, for this reason, it is particularly considered in the chronogram of activities foreseen in the last review of the Strategic Plan. However, the activities now being carried out have not yet reached an optimum level. Some public communication and information activities are being developed in communities located next to waste management sites, through participation in exhibitions, public hearings, etc.		
Seq. No 95	Country United States of America	Article Article 32	Ref. in National Report G-4
Question/ Comment	The storage of research reactor spent fuel is described as "underground" in the DCMFI facility. This appears to be dry storage. Is this correct, or are the "tubes" water cooled?		
Answer	The storage facility is composed by underground tubes, where the SF are loaded. The "tubes" contain treated water for SF cooling (natural water convection). For a better understanding of the storage system, a drawing of a DCMFEI battery tubes are attached to this answer.		
Seq. No 96	Country United States of America	Article Article 32	Ref. in National Report 3
Question/ Comment	In section A.3 and elsewhere in Argentina's National Report, the report states no reprocessing decision has been made, but will be made by 2030. Australia, in its National Report has stated "Argentina has already developed and demonstrated a novel technology for processing aluminum-clad research reactor spent fuel, and has plans to use that technology for managing its own research reactor spent fuel." Australia indicates Argentina will take back the spent fuel from the Argentina-supplied OPAL reactor if this fuel cannot be returned to the U.S. Please explain this apparent inconsistency.		
Answer	There is no inconsistency among the policies concerning the Management of Spent Fuel declared before the Joint Convention, the development of a conditioning technology for MTR SFs and the commitment with Australia. As was stated in the first and the second National Reports: - Argentina will take the decision to reprocess or not the SFs originated in the nuclear power generation before year 2030. - Regarding reactors for research and production (MTR) our country shall return the Spent Fuel, when possible, to the country within which the uranium enrichment process was made. When this is not possible, we intend to condition it using appropriate technology for its final disposition. Regarding Article XII of the Cooperation Agreement between Australia and Argentina on the Pacific Uses of Nuclear Energy,		

	Argentina has committed to process or conditioning the SFs arising from reactors provided by Argentina, in case it was required.