

REPORT ON THE THIRD REVIEW MEETING OF THE CONTRACTING PARTIES TO THE JOINT CONVENTION ON THE SAFETY OF SPENT FUEL MANAGEMENT AND THE SAFETY OF RADIOACTIVE WASTE MANAGEMENT

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OVERVIEW

The third Review Meeting of Contracting Parties to the Joint Convention was held from 11 to 20 May 2009.

The review process consists of the submission of National Reports on compliance with the articles of the Joint Convention in accordance with the reporting requirement provisions of the Joint Convention. Australia submitted its third National Report in October 2008.

At the third Review Meeting, 44 Contracting Parties participated, another three Contracting Parties participated but did not submit national reports and a further Contracting Party submitted a National Report but did not participate. Contracting Parties were divided into six Country Groups with Australia assigned to Country Group 4 along with Argentina, Czech Republic, Greece, Luxembourg, Nigeria, United Kingdom and Ukraine. Australia was represented by officers from ARPANSA, ANSTO and the Department of Resources, Energy and Tourism. ARPANSA led the delegation.

Australia reviewed the national reports of all Contracting Parties (CPs) within Group 4 along with those of several CPs outside the Group and posted 138 questions to 14 CPs. Australia received 58 questions in relation to its National Report and responses were drafted in consultation with State and Territory regulators, ANSTO and the Department of Resources, Energy and Tourism.

Summary Report

The summary report for the Review Meeting included the following matters of relevance to Australia:

- Clearance systems have been established or are being developed by some countries - France has made the decision not to include clearance in its regulatory framework.
- Increasingly comprehensive inventories are being used as the basis for the development of spent fuel and waste management strategies.
- Progress in the siting, construction and operation of geological disposal facilities was reported by some countries – e.g. France, Sweden.
- Countries with small nuclear programmes mentioned the establishment of regional repositories. The topic requires further cooperation to progress.
- NORM that is not part of the nuclear fuel cycle was included in the National Reports of some countries.
- Funding for the decommissioning of research reactors remains a problem for some countries.
- Tracking systems and national registries have been introduced to manage disused sealed sources and orphan sources.
- Waste minimisation was important in relation to the resource value of disposal space.
- The early involvement of stakeholders and affected communities was recognised as being of utmost importance.
- The repatriation of research reactor spent fuel was identified as a good practice.
- The benefits and importance of enhancing international cooperation was noted including the use of the IAEA Integrated Regulatory Review Service and the IAEA Safety Standards.

Open-ended working group

The Review process also included discussion of improvements for future review meetings by an open-ended working group. The working group's recommendations were approved at the plenary session of the Review Meeting. The approved recommendations are summarised below:

- Policy makers topical meeting – challenges identified at the conclusion of the Review Meeting will be further considered in relation to the role of policy makers in achieving the objectives of the Joint Convention. The proposal will be developed by the IAEA Secretariat and the UK and will be decided at the next Organisational Meeting. If accepted, National Contact Points for the Joint Convention will be advised of the subject topic in order to prepare for discussions at the next Review Meeting.
- Data presentation tool for National Reports based on NEWMDB – the tool is to be used on a voluntary basis by contracting parties. The information provided to the Secretariat and retrieved from the NEWMDB must be accurate and for the appropriate time period for the national report. Contracting Parties determine access. The Secretariat will provide guidance on use of the tool.
- Improvements in Officers' selection and Joint Convention leadership – the nomination and selection process for the President and Vice-President of the meeting has been modified to include formal submission of relevant biographical information, qualifications, issues to be addressed over the three years and the position of the candidate in relation to the issues identified. Candidates can make a short presentation at the Organisational Meeting. This information will be circulated to contracting parties to attempt to reach consensus on the selection. The nomination of other Officers will require an indication of the willingness of candidates to be considered for other officer roles other than the nominated position.
- Knowledge transfer and continuity between Review Meetings – Officer positions are to be held from one Review Meeting to the next Organisational Meeting. The transfer of knowledge from outgoing Officers to the incoming Officers will include a workshop. The Organisational Meeting will now be scheduled to take place 12 months prior to the Review meeting.
- Improve interaction between Review Meetings – the Secretariat will investigate and initiate innovative means to establish continuity and ongoing dialogue between Review Meetings among Contracting Parties and General Committee members. The Secretariat will organise meetings between review meetings to address specific topics identified at the previous Review Meeting. The Secretariat will host a meeting to discuss the recommendations to enhance communications to promote continuity between meetings by June 2010.
- Amendments to the duties of the Country Group Vice-Chair – Vice-chairs will not be assigned to country groups of which their country is a member.

Dates for the Fourth Review Meeting and Organisational Meeting

	Deadline
Submission of nominations for President and Vice-Presidents	10 March 2011
Submission of nominations for Chairs, Vice-chairs, Rapporteurs and Coordinators	10 April 2011
Organisational Meeting	10-11 May 2011
Submission of National Reports	7 October 2011
Submission of questions and comments	7 February 2012
Submission of answers	7 April 2012
Fourth Review Meeting	7-16 May 2012

SUMMARY OF COUNTRY GROUP REPORTS

Following is a summary of the rapporteur's reports for each of the country groups.

Country Group 1 was made up of Belgium, Croatia, Denmark, Netherlands, Romania, Spain, USA and Uzbekistan. The Rapporteur made the following observations in relation to the country group:

- Long-term management of waste in countries with small nuclear programs is still an issue mainly for financial reasons.
- There had been an increased use of the IAEA Integrated Regulatory Review Service.

In relation to the countries within the Group 1, the report to the plenary included the following aspects of their presentations:

- **Belgium** – a national waste management plan is expected by 2010 and an IRRS is being planned.
- **Croatia** – a national waste management strategy is proving a challenge to complete.
- **Denmark** – three research reactors are at various stages of decommissioning. The early involvement of all participants in waste management plans was noted as a good practice. There are plans to introduce for a self-assessment system akin to that utilised in preparation for IRRS missions.
- **Netherlands** – public acceptance of geological disposal is low. There is a long-term strategy in place with a well established framework.
- **Romania** – there is strong government support for nuclear power. A 'partial siting licence' has been issued for a LILW repository that is expected to become operational in 2014. There has been extensive use of international peer reviews. There is periodic revision of the National Waste strategy.
- **Spain** – no decision has been taken on the final option for the long-term management of spent fuel and high level waste (planned for 2025). Undertook an IRRS mission in 2008.
- **USA** – the establishment of national clearance standards has been deferred due to higher priorities and limited resources. Regulations to implement a National Tracking System have been established.

Country Group 2 was made up of Belarus, China, France, Estonia, Lithuania, Senegal, Slovakia and South Africa. The Rapporteur made the following observations in relation to the country group:

- Several countries had identified the need to maintain and expand knowledge management and human resources.
- All countries are considering deep geological disposal for spent fuel, high level waste and in some cases for long lived low and intermediate level wastes.
- There is a focus on waste minimisation at source.
- All countries have recognised the need to solve the issue of legacy waste; several have already initiated action in this area.
- Disused sealed sources are a common concern; most countries have established a management plan.

In relation to the countries within the Group 2, the report to the plenary included the following aspects of their presentations:

- **South Africa** – a waste management institute has been established by an act of parliament to be responsible for all aspects of waste management (including research and development).
- **Belarus** – two 1000MW nuclear power plants are to come on line in 2015 and 2016.
- **Slovakia** – an independent waste disposal organisation has been established (JAVYS). A nuclear backend strategy has been developed and will be reviewed every three years.
- **France** – a national inventory of radioactive waste and recoverable materials has been established. In 2006 the Planning Act was published which sets principles for the National Management Plan for radioactive materials and waste.
- **Estonia** – the state has taken responsibility for management of historical waste. A National Radiation Protection Plan has been put in place. The maintenance and increase in competencies and knowledge so as not to jeopardise radiation safety in the future has been identified as a challenge. Establishment of waste management system for very low activity radioactive waste has also been identified as a challenge.
- **China** – there are 11 operating nuclear power plants and 12 research reactors. A pilot reprocessing plant is to start active tests in 2009. There are 31 provincial radioactive waste storage facilities, two LILW disposal facilities in operation and another at the site selection stage. The establishment of processes for control of the scrap metal industry was identified as a challenge.

Country Group 3 was made up of Austria, Brazil, Bulgaria, EURATOM, Japan, Morocco, Slovenia and Sweden. The Rapporteur made the following observations in relation to the country group:

- The main challenge remains the siting, construction and operation of spent fuel and radioactive waste repositories. Regarding spent fuel, the first repository is currently planned to be available in the early 2020s.
- For countries with no nuclear power programme, the final management of institutional radioactive wastes including disused sealed sources could be a major challenge.
- The assurance of human resources and maintaining know-how has generally been recognised as a challenging issue.

In relation to the countries within the Group 3, the report to the plenary included the following aspects of their presentations:

- **Austria** – no LILW repository is planned at present, rather international co-operation is being sought.
- **Brazil** – significant part of the current waste inventory originates from the Goiania accident. All disused sealed sources that are not returned to the manufacturer are collected and stored by CNEN. The Santo Amaro monazite sand treatment site has been decommissioned for unrestricted use. The establishment of a state company responsible for radioactive waste management is being considered.
- **Bulgaria** – a programme for collecting and managing sealed sources and other waste from past practices has been established.

- **EURATOM** – initiatives to encourage Member States to establish waste disposal programmes have been developed. The enhancement of information and transparency in the nuclear field for example in relation stakeholder dialogue within the European nuclear Energy Forum was identified as a challenge.
- **Japan** – volunteer communities are being sought to host a HLW repository. A clearance system for decommissioning wastes is being implemented.
- **Morocco** – centralised national radioactive waste management approach and facility are available. A robust management system for disused sealed sources is in place.
- **Slovenia** – public involvement in the siting process for the planned LILW repository has involved establishing local partnerships.
- **Sweden** – strategy in place for final disposal of spent fuel and long-lived low and intermediate level waste. There is extensive public participation in the decision making process, a strategic National Waste Management Plan addressing both nuclear and non-nuclear waste management is being developed.

Country Group 4 was made up of Argentina, Australia, Czech Republic, Greece, Luxembourg, Nigeria, United Kingdom and Ukraine. The Rapporteur made the following observations in relation to the country group:

- International cooperation and IAEA safety standards play an important role via direct reference, incorporation in legislation and benchmarking.
- There is a strong commitment of regulatory authorities to self-assessment and peer review such as the IAEA IRRS.
- Promoting the Joint Convention to new countries is an on-going challenge and regional promotion by contracting parties should continue to be supported by the IAEA.
- There is a need for holistic national waste management strategies.
- The management of radioactive waste in countries with relatively small amounts of waste presents particular challenges.
- Integration and compatibility of safety and security in the regulatory framework needs careful attention.
- Radioactive materials in metal produced from scrap needs continued attention through national and international arrangements.

In relation to the countries within the Group 4, the report to the plenary included the following aspects of their presentations:

- **Argentina** - has an information registry and preservation system for radioactive waste inventories and has had a National Radioactive Waste Management Programme in place since 2003. Development and building of a near surface ILW repository and LLW near surface disposal system where VLLW will also be disposed.
- **Greece** – supports development of regional solutions for final disposal of radioactive waste. Programme for collecting all spent and disused sources has been in place since 1990.
- **Ukraine** – development of national strategy and National Special Ecological Programme on RWM with Action Plan for 2008-17. National Program in Chernobyl NPP Decommissioning and Transfer of Shelter Object into ecologically safe system approved by Parliament. IRRS mission in June 2008 was accompanied by plan for actions 2008-11 approved by government in October 2008.

- **Czech Republic** – constructive and transparent relationship between the regulatory body and licence holders. Since 2002, there has been a stable and long-term strategy and policy for radioactive waste and spent fuel management.
- **Luxembourg** – active encouragement by the regulator to replace radioactive sources with non-radioactive alternatives if available and to minimise the production of waste. Most historical radioactive sealed sources have been returned to the country of origin or to a foreign waste management facility.
- **Nigeria** – intends to generate electricity through nuclear technology from 2017. Implementation of the National Policy on radioactive waste management is planned including plans to establish legislation, regulations and guidance documents on spent fuel and radioactive waste management and radioactive waste management agency.
- **United Kingdom** – nuclear power to form part of energy strategy. Framework for implementing geological disposal published in June 2008. Minimisation of waste production and discharge by development of a tritium recovery plant at a radioisotope production facility.
- **Australia** – see full report below

Country Group 5 was made up of Italy, Iceland, Republic of Korea, Latvia, Switzerland, Norway, Germany and Uruguay. The Rapporteur made the following observations in relation to the country group:

- Most countries have defined a national action plan for spent fuel and radioactive waste management and there has been substantial progress in implementing these plans.
- Interim storage is an established and widespread predisposal practice.
- Site selection process of repositories is a major challenge in particular due to social-political facets and ad hoc committees at the local, regional or national level may facilitate the process.

In relation to the countries within the Group 5, the report to the plenary included the following aspects of their presentations:

- **Italy** – Proposed comprehensive roadmap to have National Centralised Storage Facility, LLW repository near-surface and interim storage for unprocessed spent fuel, HLW, LILW-LL.
- **Iceland** – decreasing use of radioactive sources for industrial uses due to substitution by other technologies. No proposal for national repository rather expectation is for establishment of international facility in the region. Centralised database for radioactive sources. Preventative action by regulator to avoid generation of orphan sources.
- **Republic of Korea** – increase in nuclear power – 10 new NPPs up to 2030. Radioactive waste management policy stated in institutional documents. Strong commitment to pyroprocess technology.
- **Latvia** – long term strategy for radioactive waste management does not exist, only short term actions (3-5 years).
- **Switzerland** – long-term management for radioactive waste defined – disposal in deep geological repositories for all types of waste. New energy strategy announced in 2007 included new NPPs (3 license applications submitted in 2008). Successful feasibility demonstration of geological disposal. Research program in waste management includes underground research laboratories.

- **Norway** – two research reactors have new license to cover 2008-2018. Dedicated repository for TENORM licensed in 2008 will be declared for next review meeting. General exemption levels are to be established.
- **Germany** – draft national radioactive waste management plan to be presented. No decision about site selection for spent fuel and high level waste included in plan. A nuclear waste management commission has been formed to support the formulation of a radioactive waste management policy.
- **Uruguay** – Submitted report but did not attend review meeting. National strategy for the management of radioactive waste defines the obligations of the storage operator and the regulator.

Country Group 6 was made up of Russian Federation, Tajikistan, Kyrgyzstan, Ireland, Finland, Hungary, Poland and Canada. The Rapporteur made the following observations in relation to the country group:

- Countries are at different stages of developing their regulatory framework for management of radioactive waste and spent fuel.
- IAEA standards are generally followed but issue is with implementation of strategies with visible milestones.

In relation to the countries within the Group 6, the report to the plenary included the following aspects of their presentations:

- **Russian Federation** – a long term strategy for radioactive waste and spent nuclear fuel has been adopted since the last review meeting. Operating licences with validity period of 3-7 years.
- **Tajikistan** – Submitted report but did not attend. Limited nuclear programme with substantial uranium legacy challenges which need international cooperation to be properly addressed.
- **Kyrgyzstan** – Report not submitted and no representation at meeting.
- **Ireland** – concept of clearance level not applied but adheres to the polluter pays principle. Encourages use of non-radiological alternatives where available. Increased licence fees charged to discourage licensees from holding on to redundant sealed sources.
- **Finland** – technical support and competence are being developed in anticipation of future needs. Technical competency of regulator must be equivalent to the operators. Active management of knowledge transfer.
- **Poland** - future for radioactive waste management and spent fuel is largely dependent on decisions regarding NPP. Two parallel options for spent fuel management are being considered. Efforts are being made to involve high decision makers in government in processes important for radioactive waste safety.
- **Hungary** – periodic safety review of ISFSF was carried out in 2007 and concluded in 2008. Damaged fuel cleanup project has been successfully completed. Development of a national strategy related to HLW and SF has been identified as a challenge.
- **Canada** – substantial progress made in radioactive waste management and spent fuel management since the last review meeting. A Waste Owners Group has been established to focus on long term radioactive waste management plans and improve communication among the waste owners. Long-term performance models are being used for management of uranium tailings.

AUSTRALIA'S PRESENTATION TO THE CONTRACTING PARTIES FOR THE THIRD REVIEW MEETING

The Australian presentation focused on issues raised during the review process:

- National program
- Regulatory system – waste classification scheme; progress on national uniformity; recruitment and skills management
- Uranium mining wastes – expansion activities
- Spent fuel decommissioning
- Long term waste management policy – results of site investigations, consultation and policy

National Program

The presentation covered the respective responsibilities of the Commonwealth Government and the States and Territories in relation to regulation, nuclear facilities, waste facilities and emergency response. The agreed matrix to summarise arrangements for spent fuel, nuclear fuel cycle waste, application wastes, decommissioning liabilities and disused sealed sources was presented largely unchanged from the second review meeting.

Type of Liability	Long term Management Policy	Funding of Liabilities	Current Practices/ Facilities	Planned Facilities
Spent Fuel	<ul style="list-style-type: none"> • US origin spent fuel repatriated • Non US SF exported for reprocessing • LLILW 100 year storage pending consideration of disposal 	Government funded	<ul style="list-style-type: none"> • US: on-site storage followed by repatriation • Non-US: on-site storage followed by overseas reprocessing and return of waste 	Long-term LLILW storage facility
Nuclear Fuel Cycle Waste	On-site disposal (mining tailings)	Mine owner (guaranteed by bond) Government funding for legacy wastes	On-site disposal	
Application Wastes	LILW-SL: disposal LILW-LL: storage; disposal under consideration	Commonwealth: Government funded Other: owner	WA: disposal (some) QLD: state storage Other: storage at site of generation	
Decommissioning Liabilities (1)	<ul style="list-style-type: none"> • Decommissioning of MOATA and HIFAR research reactors • New OPAL reactor has met decomm. plan requirements 	Government funded	<ul style="list-style-type: none"> • MOATA – planning for Stages 2 & 3 of decommissioning • HIFAR – licence granted to possess and control facility for 10years 	Centralised disposal and storage facilities
Disused Sealed Sources	Repatriation to manufacturer where possible	Owner	Repatriation to manufacturer where possible	

National uniformity of radiation regulation

In relation to national uniformity of regulation, the Contracting Parties were provided with a summary of the development of the National Directory for Radiation Protection (NDRP) as the means for achieving uniformity. Contracting Parties were informed of proposed elements of the National Directory relevant to waste management. These elements consisted of: the discharge limits to air, water and land (as reported in 2006); management of sources beyond recommended working life and the management of orphan sources; and the classification of waste.

In relation to the classification of waste, Contracting Parties were informed that Australian radiation protection legislation does not define radioactive waste, rather it is regulated as radioactive material. Contracting parties were informed that a classification scheme is being developed based on IAEA guidance and will be implemented in late 2009. The Contracting Parties were informed that Australian guidance exists for near-surface disposal, pre-disposal management and disposal of very low-level wastes.

In relation to progress with the NDRP, Contracting Parties were informed of the change in the development process to the use of individual amendments rather than a new edition. Contracting Parties were informed that since 2004, four of seven States and Territories had reviewed their legislation in accordance with the NDRP. It is estimated that by 2014 all jurisdictions will have reviewed their legislation in accordance with the NDRP. Contracting Parties were informed of the following outcomes of a review of the NDRP by the Radiation Health and Safety Advisory Council:

- NDRP is an important part of the uniformity process and gives weight to approaches to government for change;
- NDRP is catalyst for change and source of progress;
- model should be reviewed to improve efficiency; and
- process changes supported for improving efficiency.

The Contracting Parties were informed that the 2007 IRRS mission to ARPANSA, found that the progress in promoting uniformity among the States and Territories was remarkable and that the achievement of consistent exemption levels was noted.

In relation to the maintenance of skills and expertise, the Contracting Parties were informed that around 50% of regulatory and operator staff will be eligible for retirement in the next 10 years. The strategies to ameliorate this issue consisted of the introduction of graduate recruitment programs at ARPANSA and ANSTO, the retention of experienced staff, the use of retired staff for special projects and the development of succession plans for critical areas. The graduate recruitment program was noted as a good practice by the 2007 IRRS mission and the need for a more comprehensive training program was identified.

The Contracting Parties were informed that the challenges in relation to national uniformity included:

- expansion of the scope of harmonisation;
- improvement of progress of harmonisation through new development process;
- maintaining skill and expertise in regulatory bodies; and
- recruitment of regulatory staff.

Uranium mining wastes in Australia

Contracting Parties were informed that the regulation of uranium mining operations is the responsibility of States and Territories and that Australia has three operational uranium mines and several mines that have been closed for many years.

In reference to the challenges identified at the second review meeting, updates were provided in relation to demand on regulatory authorities with the opening of new mines and remediation of closed uranium mines in high rainfall areas or where there has been a change in land usage.

In relation to demand on regulatory authorities, the Contracting Parties were informed that although no new mines had opened, several new applications were expected soon and that there had been a change in government policy in Western Australia to allow uranium mining. In addition, there had been further exploration of the Ranger Mine in the Northern Territory, expansion of the Olympic Dam and Beverly mines and approval of the Honeymoon mine in South Australia.

In relation to remediation of close uranium mines, Contracting Parties were informed that in the case of:

- the South Alligator Valley, funds and regulatory approval had been provided by Commonwealth Government for rehabilitation and disposal of tailings in accordance with the Code of Practice for radioactive waste management in mining and mineral processing.
- Narbalek, rehabilitation had yet to be approved due to re-vegetation issues.
- Rum Jungle, acid mine drainage had complicated rehabilitation of the site and there were now new exploration interests in the same area. A new Commonwealth funded program had been initiated in May 2009 to develop remediation options.

A map of Australia with the locations of these mine sites was presented.

On the topic of expansion of uranium mining, Contracting Parties were informed that for the:

- expansion of the mine at Olympic Dam in South Australia, this involved environmental approvals as well as the approval of the South Australian and Northern Territory Governments.
- Ranger mine, environmental approvals for pit extensions and an exploratory drive for a potential underground mine were underway and would involve the Northern Territory Government as well as the Commonwealth Government
- The new government of Western Australia has a policy to allow uranium mining
- There had been an increase in requests for preliminary environmental approvals
- Guidance was being drafted in line with ICRP 103 for radiation protection of the environment

Management of spent fuel and decommissioning wastes and nuclear facilities

Contracting Parties were informed that Australia has three research reactors all operated by ANSTO – one 20MW operational reactor (OPAL), one 10MW shutdown reactor (HIFAR) and a 100kW reactor (MOATA) being decommissioned. Contracting Parties were informed that Australia's policy is to send all spent fuel overseas.

In terms of changes since the second review meeting, Contracting Parties were informed that the HIFAR research reactor had been replaced by the OPAL research reactor. The waste generated by OPAL is far less than that generated by HIFAR and the spent fuel from OPAL is managed within the containment vessel of the reactor by being stored in a service pool adjacent to the reactor pool until the spent fuel is exported for repatriation or reprocessing.

The current spent fuel management practice is that no waste will be returned to Australia for US obligated fuel accepted by the US under the FRR-SNF policy. For other spent fuel sent for reprocessing at Dounreay in the UK or La Hague in France, wastes will be returned to Australia as LILW – LL. In addition, US obligated fuel irradiated before May 13, 2016 will be accepted under the FRR-SNF policy, and for fuel irradiated after May 12, 2016, contracts are in place for spent fuel to be sent to France for reprocessing.

In relation to the decommissioning of MOATA, Contracting Parties were informed that fuel and cooling water has been removed, the control room has been dismantled and that decommissioning should be completed by 2010.

In relation to the decommissioning of HIFAR, Contracting Parties were informed that a licence to possess or control had been granted for safe enclosure for approximately 10 years and that a licence to decommission would be sought following the enclosure period. During the enclosure period, elements with very low activity, such as cooling towers, will be dismantled.

For the OPAL reactor, a preliminary decommissioning plan was submitted as part of the licence application to operate the reactor. The Plan included materials to minimise activation, space for access, and minimisation of decommissioning wastes.

In relation to good practices, the Contracting Parties were informed that the IRRS review identified the draft regulatory guidance for the decommissioning of controlled facilities to be a comprehensive collection of requirements and recommendations for the full process of decommissioning of nuclear facilities.

The studies of contaminant distributions and migrations at the Little Forest Burial Ground at Lucas Heights and its acceptance as a case study for the IAEA EMRAS project, was submitted to the Contracting Parties as an example of a good practice.

In terms of challenges, the presentation identified the long-term storage of LILW-LL from reprocessing of spent fuel if a waste management facility is significantly delayed. Contracting Parties were informed that contingency planning had begun in relation to the potential delay.

Long-term radioactive waste management policy

Contracting Parties were provided with an overview of existing and proposed facilities across Australia and in particular those of Commonwealth Government agencies.

Contracting Parties were provided an update on developments in Australia's long-term waste management policy since the second review meeting. This included the commencement of site investigations in March 2006 and the approach by the traditional

owners of Muckaty Station in the Northern Territory to the Commonwealth Government nominating a potential site in return for appropriate compensation. This was followed by 12 months of consultation with the Muckaty traditional owners including a visit to waste facilities at ANSTO. In May 2007, there was formal nomination of land on Muckaty as a volunteer site and preliminary site investigations were begun in October 2007. The Contracting parties were provided with a summary of the views for and against encountered during community consultations.

Contracting Parties were advised that there was a change in policy with the election of a new Commonwealth Government in November 2007. The new policy consisted of the following elements

- not to proceed with sites previously identified unless there contracts were in place;
- repeal of the Commonwealth Radioactive Waste Management Act 2005;
- establish a new process for identification of sites that would allow access to appeal mechanisms;
- identify a site in accordance with the new process; and
- ensure full community consultation in decision making; and commit to international best practice.

Contracting Parties were informed that site investigations at four potential sites identified under the previous process were undertaken as contracts had been entered into. Assessment was completed in mid 2008 and a peer review was completed in February 2009 with the final report completed in March 2009.

The preliminary assessment is that any of the four sites could host a near-surface repository subject to appropriate engineering. The Muckaty traditional owners have reiterated their support for the volunteer site and the Government is considering its position. Contracting Parties were informed that the Government acknowledges the need for a national radioactive waste facility and has committed to select a site before the next federal election at the end of 2010.

The presentation then summarised Australia's planned activities and challenges.

Country Group Questions and Rapporteur's Report

The Country Group session was attended by 13 members of the Country Group Four and seven members from other Country Groups. During the question and answer session following the presentation, there were 14 questions covering a variety of topics including the following:

- Nigeria and the Czech Republic sought clarification on the absence of a definition for radioactive waste and the impact on the management of waste. Country Groups were informed that waste was managed as radioactive material and that national standards such as that for near-surface disposal was used.
- Luxembourg asked about the re-entry of sources manufactured in Australia and were informed that legislation did allow the re-entry of such sources and that these were then kept in intermediate storage.
- Argentina asked whether there were any restrictions on mining where rehabilitation is still to be undertaken. Country Groups were informed that such a situation had not arisen.

- The Ukraine asked about the timing for the return of waste from the reprocessing of spent fuel and the availability of a waste facility for its storage. It was acknowledged that there is a time constraint and that options are being developed for short term storage.

Questions from the officers included further discussion in relation to the scientific activities at the Little Forest Burial Ground and clarification that liability for orphan sources is accepted by States and Territories.

The Rapporteur's Report highlighted the following aspects of Australia's presentation:

- Long-term radioactive waste management policy is currently under review
- Licensees are responsibility for managing wastes
- The NDRP provides a national framework for achieving uniform outcomes of regulation of radiation
- Expansion of Olympic Dam and Beverly Mines and approval for Honeymoon mines in South Australia as well as further exploration at the Ranger Mine
- HIFAR RR replaced by OPAL RR in 2007
- MOATA RR decommissioning to be completed by 2010
- HIFAR RR decommissioning to be completed by 2016 pending available waste storage capacity
- OPAL SF stored in containment – less handling and greater security and safety

In relation to the sources of wastes and spent fuel the Rapporteur noted:

- Two shutdown and one operating research reactors
- Operational and closed uranium mines
- Hospital, research and industrial activities

In relation to planned activities and challenges identified at the previous review meeting in 2006, the Rapporteur noted:

- Progress on the harmonization of legislation between jurisdictions although it remains a challenge
- Legislation has been amended to better control export of radioactive waste as part of the implementation of enhanced security of sealed sources
- The review of the long term radioactive waste management policy for the establishment of facilities for disposal and longer term storage of radioactive waste, the suspension of work for the siting of a facility pending a Government decision and a commitment to select a site for disposal facility before the end of 2010.
- The development of regulatory guidance for the radiation protection of the environment in line with ICRP 103 in response to the potential opening of new uranium mines
- Progress in the rehabilitation of closed uranium mines at the South Alligator Valley, Rum jungle and Narbalek sites.
- The delay in the establishment of a facility for storage of ILW returned from reprocessing and that contingency planning is underway.

In relation to good practices, the Rapporteur noted the following aspects:

- the strong commitment of ARPANSA to peer review as evidenced by the 2007 IRRS mission to ARPANSA

- the study of distributions and migrations of radionuclides by ANSTO at the Little Forest Burial Ground which has been accepted as a case study for the IAEA EMRAS project
- the introduction by ARPANSA of a graduate recruitment program to address staffing issues
- Australia's active role in promoting radioactive waste safety and sealed source security in its region including promoting the Joint Convention.

The Rapporteur identified the following challenges for Australia – progress on these aspects will be assessed at the next meeting:

- Establishment of facilities for long term radioactive waste management
- Contingency plan for storage of returned LILW-LL reprocessing waste
- Remediation of legacy mining sites
- Maintaining appropriate levels of skill and expertise in regulatory bodies and operators

The following planned measures to improve safety were identified for Australia - progress on these aspects will be assessed at the next meeting:

- The review of long-term radioactive waste management policy
- Adoption and use of a waste classification scheme by the end of 2009
- Establishment of storage facility for LLILW – LL and near-surface disposal for LILW-SL
- Expansion of the scope of the National Directory for Radiation Protection to include further elements relevant to waste management
- Planning for rehabilitation of Rum Jungle
- Development of regulatory guidance for new U mines especially in relation to closure and environmental protection
- Continuation of scientific studies of the Little Forest Burial Ground with a view to future management options
- Implementation of a more comprehensive training program for regulatory staff in accordance with the IRRS recommendation
- Completion of the decommissioning of the MOATA RR by 2010
- Dismantling of the HIFAR RR components with very low activity during the safe enclosure period.

In summary the Country Group concluded that Australia had addressed all the articles in the national report and answered questions in a full and transparent manner. The national report and presentation demonstrated compliance with the Joint Convention and that Australia provides a good model for countries in the region considering signing the Joint Convention.

SUMMARY OF KEY ISSUES FROM NATIONAL PRESENTATIONS

Following are reports by the Australian delegation on the presentations of other CPs in Country Group 4 and a selection of other CPs from other Country Groups.

Argentina

Argentina has diverse nuclear facilities and wastes as a result of power generation, research reactors, enrichment, U mining and military research. These facilities are located in many locations across the country with a high number in Buenos Aires Province.

- Achuta 2 NPP is being completed (expected in 2011) after 15-20 years pause in construction. This poses additional Regulatory resource issues because of this unusual situation.
- Argentina has no site licensing stage in its regulatory system. It is part of its Construction licence phase.
- Argentina's constitution forbids the importation of radioactive waste. This is a considerable problem as Argentina is a major source producer. Argentina permits re-entry of sources for recycling. Considered a problem within the Country Group.
- Argentina applies two institutional control periods - an active period in which the waste is the responsibility of the operator and a passive period under national control. The active period is likely to be 50 years but is still under discussion.
- Disposal of liquids in special cases with short lived RW (half-lives <5 years).
- Spent fuel storage limitations have been overcome by extension of wet and dry storages.
- Argentina has a strong training program to support its nuclear program and has two Postgraduate Nuclear schools. It trains people regionally.
- Research Reactor spent fuel returned to USA.

Belgium

Staffing

Belgium reports that the regulator and operators are adequately staffed. Belgian law requires staff at nuclear installations to undergo regular training to ensure their knowledge is up to date.

Development of regulatory body

Belgian law establishes the Federal Agency for Nuclear Control as an independent regulator within the portfolio of the Minister of the Interior.

Development of waste management organisation

ONDRAF/NIRAS, within the portfolio of the Minister of Energy, is an independent waste management organisation. Established in 1980, it is responsible for management of all radioactive waste generated in Belgium, including spent fuel and NORM waste.

National radioactive waste management plan

ONDRAF/NIRAS is developing a national waste management plan to be submitted to the Belgian Government in 2010. The major objective is to obtain a decision in principle on the long-term management of long-lived and high level radioactive waste. ONDRAF/NIRAS's preference is for deep geological disposal, however it must also develop alternative strategies as part of the plan.

Belgium has already decided to dispose of low level wastes and a site has been selected.

Open processes

In siting its low level repository, ONDRAF/NIRAS entered into partnerships with three local municipalities. Consultative committees were established which discussed not only potential sites but also disposal concepts and facility designs. This process ensured wide community acceptance of the chosen site.

ONDRAF/NIRAS, in developing the national waste management plan, is required to conduct a participatory process, including wide consultation with the public.

Financing of liabilities

Generators of radioactive waste must pay into a fund operated by ONDRAF/NIRAS. Operators of non-nuclear power plant installations must also negotiate financial liabilities for decommissioning with ONDRAF/NIRAS. Operators of nuclear power plants must establish their own funds for decommissioning, and are liable for any shortfalls.

Decommissioning

Decommissioning plans must be in place for all nuclear installations and reviewed every five years in consultation with ONDRAF/NIRAS. Decommissioning of one research reactor, the EUROCHEMIC reprocessing plant and the waste treatment plant at Belgoprocess is in process. Planning is underway for decommissioning of the Belgonucleaire MOX fabrication plant.

China

Staff resources/ training/ qualifications

Increased effort required to ensure availability of sufficient trained staff to meet the necessities of the nuclear program. The rapid expansion of the nuclear industry in China requires a commensurate increase in the number of people to run the facilities. To accomplish this there is the need to bring in foreign experts to supplement training needs.

Within the education system in China there is already a significant effort being applied to the issue of nuclear-based training. Such training typically begins in the university system and extends to on-the-job training (with supplementation from foreign experts). The NNSA (National Nuclear Safety Administration) has invited a number of universities across China to help train staff within the industry. Several hundred staff are

being trained in this manner. China will also continue to send their young scientists to foreign countries for training.

The US pointed out that they have provided assistance to China via workshops etc, and expressed the opinion that the Chinese system of building up expertise is a good model.

Legislative/ policy issues

A legislative system and standards for the safe management of radioactive waste are in place but will be subject to further development, with foreign assistance. The law clarifies responsibility between regional bodies and promotional bodies for nuclear energy.

Development of facilities for storage and disposal of spent fuel and radioactive waste, including the supporting documentation, need to be compatible with the expansion of China's nuclear program.

Spent fuel is stored at reactor sites.

Dry storage facility for CANDU fuel under construction.

Spent fuel reprocessing, to achieve a closed nuclear fuel cycle, remains one of China's current policies.

Regulatory issues

The law clarifies the responsibilities between regulatory bodies and promotional bodies for nuclear energy. Regulations and standards for the safe management of radioactive waste are to be completed including the development of the requisite documentation. Foreign assistance has been sought in establishing the legislative and regulation system. All aspects of the construction, operation (including spent fuel and waste management) and decommissioning of nuclear facilities must have procedures approved by the regulator.

Active measures are taken by the Chinese authorities in securing control over disused radioactive sources - Radioactive Source tracking database operating.

The frequency of review of Chinese nuclear facilities is 10 years for NPPs and 5 years for other nuclear facilities.

Waste management plans

Due to the size of China and its nuclear industry there are 31 regional radwaste storage facilities, including one in Hong Kong SAR. As nuclear power industry expands, so will the generation of radioactive waste. Storage capacity for this waste will be met by 2020. Radwaste minimisation is an important aspect of China's waste management plan. A 2-year research project has been launched specifically to examine this issue.

Geological disposal is a difficult, long term issue for China with many complex technical aspects. Geological disposal of high level waste started in 1985, including modelling studies. Comparisons have been made between various geographical and

geological sites. China seeks support from other countries on HLW and geological disposal. Final site confirmation by mid-21st century.

There are currently two LILW disposal facilities in operation, with a third one planned. This third repository is not required due to forecasted volume of waste, but rather due to transport issues to avoid the need to move waste large distances.

With regards to reprocessing, China is currently cold commissioning a pilot plant. Active commissioning will commence in 2009. Vitrification of the HLW will be tested later.

Approval of the siting program for regional disposal facilities for LILW is planned.

Financing of liabilities

Management fund for spent nuclear fuel has been established by the State. The fund will be used for SF transportation; SF off-site storage; construction, operation, maintenance and decommissioning of SF reprocessing facility; HLW treatment and disposal.

Commissioning plans and financial guarantees will be taken into account during the design stage as circumstances change with time i.e. as nuclear program expands. Funding for decommissioning is met by both operators and government.

Decommissioning

The operators of nuclear facilities are responsible for preparing decommissioning plans, including investment estimates and production costs.

U mining

Legislative system on the regulation of radioactive waste management applies to U (and Th) exploitation. Disposal options for U and Th mining and milling waste are backfilling, damming, and centralised land filling.

Czech Republic

Staffing

The Czech Republic reports that its regulatory authority is adequately resourced. The regulator monitors staffing at licensees as part of regular inspections and does not report any problems.

Development of regulatory body

The 1997 Atomic Energy Act establishes the State Office for Nuclear Safety (SÚJB) as an independent regulatory authority.

Development of waste management organisation

The Radioactive Waste Repository Authority (SÚRAO), established by the Czech Ministry of Industry and Trade, has responsibility for construction and operation of radioactive waste repositories. SÚRAO is also responsible for ultimate management of spent fuel.

National radioactive waste management plan

In 1992, the Czech Government agreed to a policy for the management of spent fuel and radioactive waste. Waste suitable for near-surface disposal is disposed of in existing repositories operated by SÚRAO.

The Czech Republic intends to dispose of spent fuel and waste not suitable for near-surface disposal in a deep geological repository. SÚRAO is responsible for siting the repository and will shortly recommence site investigations.

Although the policy makes firm commitments for the direct disposal of spent fuel within Czech territory, it does not exclude spent fuel reprocessing or disposal of waste in a foreign country as options.

Open processes

The environmental impact assessment process, which major nuclear installations must go through prior to construction, has public involvement processes similar to those in Australia.

Financing of liabilities

Generators of radioactive waste and operators of facilities that will require decommissioning are required to pay funds into either the nuclear or decommissioning funds established by the Department of Finance. The rate of contribution is set by government decree. SÚRAO must verify the estimated cost of decommissioning and waste management.

SÚRAO is not required to pay into this fund as its liabilities are guaranteed by the State.

Uranium mining

Sixteen closed uranium mines or tailing sites and two active mines exist within the Czech Republic. Significant remediation of former mills, tailings dams and waste rock dumps is in progress.

Decommissioning

Operators of nuclear installations are required to submit decommissioning plans at each licensing stage (siting, construction etc), with progressively more detail at each stage.

Denmark

Staff resources/ training/ qualifications

A register is maintained of the qualifications of staff members. There are currently adequate, qualified human resources in the Nuclear Regulatory Authority, possible through training via internal courses and seminars. Nevertheless international cooperation is becoming more important as Denmark is a small country with limited resources in competence and knowledge.

Forecasting the need for staffing during the decommissioning period over the next 10 years is a challenge.

Legislative/ policy issues

Unanimous decision in Denmark that nuclear energy should not be part of the Energy policy for the country.

‘Basis for decision’ for final repository for LILW presented to parliament in January 2009 – unanimously supported not just by the government, but by all parties.

The position on finding a solution for the small quantities of spent fuel remains unaltered from the previous review meeting – if an international solution cannot be found the option for Denmark is to dispose the spent fuel at the proposed Danish repository for LILW.

Regulatory issues

Inspections of the waste storage facilities by the Nuclear Regulatory Authority is carried out at 6 to 12 month intervals.

Setting up a mechanism to undertake self assessment, such as that carried out by IRRS missions.

Waste management plan

Selection of option and siting for LILW repository remains a challenge.

Public involvement

Early involvement of all participants in the planning of tasks.

Financing of liabilities

Cost of decommissioning ~180 M USD, guaranteed by the State.

Spent fuel liabilities also met by the State, whilst non-power wastes and disused sealed sources are the responsibility of the owner. Orphan sources are guaranteed by the State.

Decommissioning

Danish Decommissioning (DD) was established in 2003 as a new institution under the Ministry of Science, Technology and Innovation. The time frame for decommissioning is 11-20 years (from 2003) with current plans to complete the task by 2018.

Decommissioning of DR1, DR2, DR3, hot cells and the fuel fabrication facility are progressing according to plans.

Research reactor DR1 fully decommissioned and released from regulatory control.

DR2 fully decommissioned although building not released from regulatory control yet. Storage will be carried out in association with DR3 decommissioning.

Partial decommissioning of DR3 carried out. Complete decommissioning to ‘greenfield’ under planning.

Project plan for hot cells decommissioning approved; activities started last quarter 2008.

U mining

None. Some tailings and contaminated concrete from U extraction research.

Finland

General

Finland’s program is centred on two main sites. Olkiluoto is home to 2 operating BWRs, the AFR storage facility and a LILW repository. An EPR is under construction and a

licence application has been submitted for fourth NPP. It is the site for the planned deep geological repository and the related underground rock characterisation facility is under construction. Loviisa houses a further 2 NPPs, plus LILW disposal facilities and a cementation plant. Construction of an ILW disposal cavern was completed in 2007. A licence application has been made for third NPP. Licence applications are also pending for two units at a new site.

Overall, waste and spent fuel management is proceeding to plan, with no significant incidents. Most activity since last RM has been on regulatory control and implementation of the spent fuel disposal project.

Staffing

Although maintaining technical competence remains a challenge, a recent recruitment exercise by STUK has been successful, with more suitably qualified applicants than needed. Due to the positive attitude to nuclear power in Finland, the industry is seen as providing long-term career opportunities.

Single national regulator

STUK has been re-organised and expanded to meet the increasing operations of the POSIVA, the national spent fuel management agency. STUK regulates all aspects of radiation and nuclear safety and undertakes research on radiation effects. It covers nuclear power, nuclear waste and nuclear materials, including safeguards.

National WMO

POSIVA, established in 1995, is responsible for all aspects of spent fuel management from research through to operation and decommissioning or closure of spent fuel management facilities, including the proposed ONKALO deep geological repository.

Open process – public engagement

In response to a question from Sweden, STUK recognised the need to establish correct balance between closeness of experts to a long term project such as ONKALO and maintaining the distance to remain objective. STUK uses external groups to review processes to ensure no undue bias creeps in. Finland's approach to proactive, open, timely and understandable public communication was recognised as good practice by Finland's country group.

Uranium mines

No disposal of uranium wastes has occurred and there are currently no regulations for such disposal. STUK will prepare regulations as needed dependent upon uranium prospecting outcomes. Some remediation has occurred at the Askola mine site. STUK inspected the site in 2007. Further work viewed as low priority due to remoteness and small scale.

Geological disposal

Finland is following a three step process on geological disposal. The Decision-in-Principle in 2001 authorised action towards implementation of the ONKALO deep geological repository. A construction licence is envisaged 2012-2014, giving authorisation to construct emplacement tunnels and an encapsulation plant, ahead of the third step, the operational licence.

Work has commenced on the Underground Rock Characterisation Facility (URCF) at the Olkiluoto site, with 3,552m of tunnel at a depth of 338m. A new 3 shaft design for the ONKALO repository was agreed in 2008, based on the KBS-3H (horizontal) design. Decision taken to limit depth to 420m, rather than 520 m as initially planned. (Questioning by Canada and Hungary revealed that this was due to desire to avoid high transmissivity fracture zones found around 500m.) The URCF is being constructed with a view to meeting regulatory requirements to enable its use as part of the eventual disposal facility.

Maintaining progress on the spent fuel disposal project was recognised as a continuing challenge.

France

The report from France highlighted clear evidence of progress since the 2nd review meeting.

France has 58 nuclear power plants in operation, one EPR under construction and one fast neutron reactor. Reactor powers range from 900 MWe (34) through 1300 MWe (20) to 1450 MWe (4). In terms of fuel cycle facilities, France has four enrichment and manufacturing plants and one reprocessing and storage facility.

In terms of decommissioning, there are eight first generation reactors and one fast neutron reactor that have been shutdown or are in the process of being dismantled.

Waste classification

Waste is classified according to six major categories which include very low level and very short lived. Waste is defined and classified according to the following matrix:

Half life \ Activity	Very short half-life (<100 days)	Short half-life (≤ 31 years)	Long half-life (>31 years)
Very low level	Management by radioactive decay	Surface disposal and recycling systems	
Low level		Surface disposal Except some tritiated waste and some sealed sources	Dedicated sub-surface facility under study
intermediate level			Ongoing studies pursuant to 2006 Planning Act
High level			

France does not have unconditional clearance threshold for waste. This is for a number of reasons - there is no public acceptance; there is difficulty in applying clearance levels where dilution is involved; and impact studies have been unable to cover any potential use of cleared material. As a result, any material used for a nuclear activity is considered at least as VLL waste if liable to have been in contact with radioactive contamination or activated by radiation.

Waste Management Policy

The main development in waste policy in France, since the second review meeting, has been the commencement of the 2006 Planning Act. The Act covers all radioactive materials and waste, sets R & D orientations and objectives for management solutions to be developed, prescribes specific communication tolls for the public and details funding principles for investigations and radioactive waste management and sets principles, objectives and direction of the National Management Plan for Radioactive Materials and Waste (PNGMDR)

The Plan was first published in 2007 and covers all radioactive waste and materials. It ensures consistency of the overall management of radioactive waste, seeks long-term solutions, takes into account public concerns and includes analysis and reviews of past decisions regarding long-term management solutions. The Plan includes identification of dedicated assets for decommissioning and the management of spent fuel and waste, establishment of a deep geological disposal, management of LL-LL waste and the management of historical waste, decommissioning operations, assessment of NORM/TENORM management routes, assessment of long-term behaviour and impact of mining and milling tailing disposals, and remediation of contaminated sites and soils. A national inventory of radioactive waste and recoverable materials is used to develop the PNGMDR. The inventory is prepared every three years by ANDRA and funded by the State. The next version of the inventory is due in 2009. The inventory also includes estimates of waste arisings to 2020 which will be extended to 2030 in the next version.

Regional waste facilities

France stated that it plans to continue to contribute on technical and social aspects for the development of an international approach on geological repositories.

Germany

The German presentation to the review meeting included the construction of the Konrad Repository in lower Saxony (an abandoned iron ore mine), the closure of the repositories at Asse and Morsleben and the remediation of former NORM mines at Wismut. Remediated sites have been sold off and transformed into a golf course and a park, although there is continuous monitoring of the sites as part of the conditions of sale.

The presentation also referred to the Karlsruhe vitrification plant which was licensed for operation in February 2009 and will start operation in September 2009. It is estimated that 60m³ of waste will be vitrified over 2 years.

Regulatory framework

The regulatory structure of Germany, as a federation, differs from that in Australia in that the local regulator is responsible for the licensing of Federal facilities. The regulatory framework is a combination of Federal and Lander authorities, where a Federal authority is responsible for setting national standards and operating waste management facilities and the relevant Lander is responsible for issuing licences. Inspection and enforcement are the responsibility of a separate part of the Federal authority.

Waste Policy

The presentation highlighted the development of a National Waste Management Plan by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety as directed by the German Parliament. The Plan is based on a comprehensive inventory of all kinds of radioactive residues and waste and includes spent nuclear fuel. The Plan will include a timetable for the disposal of heat-generating radioactive waste and spent fuel. However, finalisation of the Plan is awaiting a Government decision on site selection for the management of spent fuel and high level waste.

In June 2008, Germany established a Nuclear Waste Management Commission to advise the Federal Ministry on waste management. In terms of consultation, Ministers are involved in public consultations.

Greece

Staffing

Greece reported that its regulatory body and its State-owned nuclear research facility are adequately staffed and resourced.

Development of legislation and regulatory body

Greek law establishes the Greek Atomic Energy Commission as an independent regulator. Despite its name, the Commission does not operate any facilities.

National radioactive waste management plan

Greece does not intend to construct any waste management facilities within its territory. Greece presently ships disused sealed sources overseas and for other radioactive waste is relying on the establishment of a multi-lateral repository in another country. No contingency plans are in place should this repository not eventuate.

Spent research reactor fuel is accepted by the United States under the FRR-SNF program.

Open processes

Greece has no formal requirements for public consultation during development of standards and regulations or for licensing processes. All regulations require endorsement by the Greek Parliament.

Financing of liabilities

Greece has established a fund for the management of disused sealed sources. Funding for decommissioning and waste management at State-owned facilities is guaranteed by the State.

Uranium mining

Although Greece has some NORM wastes that are part of the nuclear fuel cycle, the national report and presentation did not declare this as being within the scope of the JC's application.

Decommissioning

Greece does not foresee decommissioning its research reactor in the near term. Consequently, it has not yet planned for decommissioning.

Luxembourg

Development of regulatory body

The Department of Radiation Protection within the Ministry of Health regulates matters relating to radiation safety and radioactive waste.

Development of waste management organisation

Due to the small amounts of waste in Luxembourg, and the foreign solution found for waste, no waste management organisation exists nor is one planned.

National radioactive waste management plan

Radioactive waste generated in Luxembourg is transported to Belgium under an agreement with the Belgian Government. The waste is disposed of or otherwise managed within Belgium. The Department of Radiation Protection operates a small interim store.

Financing of liabilities

The licensee is responsible for financing waste management, for example transport to Belgium. The State covers any shortfall.

Decommissioning

Luxembourg has no facilities to decommission.

Nigeria

Nigeria is a new ratifier of the JC and is attending its first review meeting. Nigeria has no NPPs and one 30 kW RR. The RR uses 1 kg of HEU. HEU to be replaced by LEU. Nigeria has appropriate regulatory system under the control of a 14 member Board headed by the President of the Republic.

Many high activity sources in the country are associated with the oil industry. The Nigerian Nuclear Regulatory Authority has been tracking down and eliminating orphan sources and has legislated on the topic of source security. A single agency is responsible for safety, security and safeguards.

Nigeria supports the USDOE for the security of sources initiatives. Plans for legislation regarding SNF, training of more regulatory staff, national emergency response plan and IRRS in 2010.

Romania

Staff resources/ training/ qualifications

Improving the human resources for waste management activities, including the regulatory body, is a challenge for Romania. Staffing shortfalls remain although over the past three years CNCAN has benefited from IAEA expert missions, training courses and fellowships. In addition, different bilateral governmental arrangements have been carried out to train staff or provide expert advice to CNCAN.

Legislative/ policy issues

There is strong support of government for the nuclear power program with periodic revision of the National Strategy, although improvements in the legal framework are needed.

Finalising Units 3 and 4 of CERNAVODA is planned for 2015 and 2016 respectively. New regulations have been developed on the basis of guides and standards from the US NRC, Canada, the EU, the IAEA and ASME. Organisational structure to be approved by the Prime Minister.

Major activities underway include:

- Strengthening of CNCAN (Romanian Nuclear Authority) capabilities.
- Examining and improving the strategy for geological disposal.
- IFIN-HH (National Institute of R&D for Physics and Nuclear Engineering Horia Hulubei) upgrading equipment associated with STDR (Radioactive Waste Treatment Plant).
- Establish the treatment and conditioning technology needed to enable radioactive waste to be disposed of at the Saligny site.
- Baita-Bihor national repository is in operation (a former uranium mine). Transfer of DNDR Baita Bihor responsibility to ANDRAD's administration.

Regulatory issues

- There is harmonisation of regulations with EU regulations and implementation of relevant IAEA standards.
- Licensing by the regulatory authority and approval by parliament is required in the siting of the Saligny repository.

Waste management plan

Siting process for a new near surface L&ILLW repository (in Saligny) is progressing. CNCAN issued a 'partial siting licence' with plan for operation in 2014. Deep geological disposal is planned for operation in 2055.

Public involvement

Evolving public participation in all nuclear programs. Stakeholder involvement has added to the learning process and led to success to date.

Financing of liabilities

- A mechanism has been instigated to provide funds for Cernavoda radioactive waste and decommissioning – two separate funds have been established, one for waste management and the other for decommissioning. Budget is approved by ANDRAD.
- Funding has been established for decommissioning activities at VVR-S.
- There have been improvements in the financial structure and the guarantees and efficiency of the waste management and decommissioning funds.
- A Government decision has been issued on the establishment and management of financial resources.
- NPPs contribute to the decommissioning fund whilst decommissioning of the RRs provided by the State.

Decommissioning

- One research reactor is in operation and one research reactor is shutdown for decommissioning.
- There is a decommissioning plan in place.

U mining

Funding is an issue for closure of tailing ponds and uranium mines and rehabilitation of the sites with sterile rocks and low radioactive rock dumps.

Russia

Staffing

Russia reported that its staffing levels are adequate. SC Rosatom, which operates nuclear facilities including waste facilities, runs its own educational and training facilities to ensure adequately qualified staff.

Development of legislation and regulatory body

The Russian Parliament is considering a law on radioactive waste management. Draft laws on radiation regulation, spent fuel management, decommissioning and civil liability are under development.

In 2008, Russia transferred responsibility for regulating radiation and nuclear safety to the Ministry for Natural Resources and the Environment. Members of Russia's country group expressed concern that the regulator is not genuinely independent of the State owned operating company, Rosatom. Russia assured the group that legally and, in terms of reporting to Government, the bodies are separate. The group identified assurance of separation as a challenge for Russia; the legislation under development may address this issue.

Russia is also developing a statutory inspection regime. This regime will detail timing, frequency and comprehensiveness of inspections. Russia did not elaborate further.

Development of waste management organisation

Russia intends to create a State corporation with responsibility for managing radioactive waste and radioactive waste facilities.

National radioactive waste management plan

Russia has adopted a long-term waste management plan. Features of this plan include reprocessing of spent fuel, construction of a new near-surface repository by 2015 and a deep geological repository by 2030.

Russia prohibits importation of radioactive waste. Importation of spent fuel may be granted for reprocessing or temporary storage. Spent power reactor fuel and highly enriched spent research reactor fuel of Russian origin may be imported permanently.

Open processes

During its presentation, Russia did not give high priority to public consultation processes. Consultation is undertaken with interested technical bodies during development of regulations and standards.

Financing of liabilities

Where sufficient funds are not allocated for decommissioning or waste management, the State will make up the shortfall. Operators of new facilities must fund all costs through payments into a waste management fund.

Uranium mining

Russia did not report on uranium mining activities.

Decommissioning

Decommissioning plans must be produced within a certain period before an installation's closure, depending on the category of installation.

Currently Russia is decommissioning four nuclear power reactors at two power stations as well as eleven research reactors.

South Africa

Staff resources/ training/ qualifications

- Nuclear authorisation holders are required to report to the NNR (National Nuclear Regulator) on their staffing and competency level.
- The Nuclear Fuel department of Eskom is responsible for human resource planning, whilst Necsa is responsible for their own resource management.
- Necsa has implemented a knowledge management program, involving all employees, in identifying and solving problems to ensure that the workforce is suitably qualified and experienced.
- The mines have established a Radiation Protection function with sufficient staff responsible for all activities with regard to radiation safety.

Legislative/ policy issues

Comprehensive legislative framework in place for the management of radioactive waste and spent fuel. The government has wide-ranging responsibilities including that of ownerless radioactive waste and institutional control over closed disposal facilities.

Regulatory issues

The NNR has the mandate to establish and enforce national standards in the areas of radiological health, safety and environmental protection. The regulations are based on international safety standards and regulatory practices and provide for criteria and requirements related to exclusion, exemption and regulation of actions involving radioactive materials.

The NNR deals exclusively with the regulation of the nuclear industry, providing separation of the promotional and Regulatory functions in the South African nuclear industry.

Other relevant regulatory bodies within South Africa are in the areas of Health, Minerals and Energy, and Water Affairs and Forestry.

Waste management plan

The Radioactive Waste Management Policy and Strategy (2005) serves to address radioactive waste management in a coordinated manner and relates to all radioactive wastes, except operational radioactive liquid and gaseous effluent discharges. It has been implemented through the National Radioactive Waste Management Institute which is based on the National Radioactive Waste Disposal Institute Act.

Two long-term radioactive waste management options employed in SA – above ground disposal in engineered facilities for mining waste, and near surface disposal for low and intermediate level waste (Vaalputs). If chosen as a preferred option in SA, geological disposal of high level radioactive waste shall take place with an option to retrieve the waste, in case future technology allows better management options.

Waste minimisation practised by segregation based on physical, chemical and radiological characteristics. The steps in the waste management system include pre-treatment, treatment, conditioning and disposal. Effective implementation is verified by the NNR.

Spent fuel is stored on site where generated, as an interim measure, in a combination of dry and wet storage.

Vaalputs continues to be used as a National Disposal Site for low and intermediate level waste. Despite now being considered for ILW as well, sufficient institutional control has been allowed for. ISAM methodology was used to evaluate Vaalputs for ILW, and passed all relevant criteria.

The SA government has responsibility to ensure storage capacity for all radioactive waste is maintained within specified timeframes.

Public involvement

In terms of the NNR Act, the holders of nuclear authorisations must establish a public safety information forum in order to inform the persons living in the municipal area on nuclear safety and radiation safety matters. The public is invited to NNR emergency exercises as observers, during which time opportunities are given to evaluate the state of emergency preparedness.

The process of selecting a site for long-term HL waste management will likewise involve public participation.

Financing of liabilities

Establishment of the Radioactive Waste Management Fund (RWMF) is designed to ensure that there are sufficient provisions for the long-term management options of the various wastes. The ‘polluter pays’ principle applies with funds paid into the Fund exempt from tax. The Fund is managed and administered by the government. The government will set aside funds from the RWMF for the management of radioactive waste from its own institutions.

Funding provisions are also in place for decommissioning by nuclear operators.

Decommissioning

A conceptual decommissioning strategy must be submitted for all operational and new facilities as part of safety assessment, and must be updated throughout the operation of the facility. Prior to termination of operations, a final decommissioning strategy must be submitted to the NNR for approval.

Decommissioning of the Koeberg reactor is currently scheduled for after 2035.

Decommissioning of Koeberg is regarded as a phase of authorisation and all the requirements applicable to the operational phase are applicable for decommissioning.

U mining

Scrap metal contaminated by NORM from U mining used to be a problem, but now under control by scanning and diversion.

Regulatory activities, such as compliance inspections and audits, have been increased to deal with the expansion of the U mining industry.

Sweden

Legislative/ policy issues

The Swedish Government announced an agreement, under the new Climate and Energy Bill, allowing for the replacement of existing reactors, effectively ending the previous phase-out policy.

In terms of the scope of application, all spent fuel and radioactive waste from the nuclear fuel cycle are included, whilst NORM from outside the nuclear fuel cycle is not.

Responsibilities for safety clearly defined in the legal framework which consists of The Act on Nuclear Activities, The Radiation Protection Act (under revision), The Environmental Code, and The Financing Act. The legislation sets safety targets without prescribing the method by which they are achieved.

Site selection for the repository for spent nuclear fuel is nearing completion with licence application planned mid-2010. Waste acceptance criteria for long-lived waste under development.

Regulatory issues

The new regulatory authority SSM formed by the merger of the former SKI (Swedish Nuclear Power Inspectorate) and SSI (Swedish Radiation Protection Authority). As neither the SKI nor the SSI were particularly large organisations (~110 persons in each) the merger is not creating significant difficulties, although the integration of organisational and regulatory **practices** is seen as a challenge.

- Periodic safety review at least every 10 years has been implemented.

- Licence applications for a repository for spent nuclear fuel, and a repository for decommissioning waste, are planned. Licence application for encapsulation plant granted in November 2006.
- Licence application for extension of the Final Repository for Radioactive Operational Waste (SFR) for both operational and decommissioning waste planned for 2013.

Waste management plans

- A strategic National Waste Management Plan addressing both nuclear and non-nuclear waste management is being developed.
- Centralised spent fuel storage facility is in operation at Clab.
- The repository for short-lived LILW (SFR) is operating.
- Site selection for a spent fuel repository is in the final stages with selection due in June 2009.

Public involvement

Transparency of nuclear activities assured by law. Public consultation and influence forms an important part of the decision-making process. There is a high level of public acceptance with respect to these projects due to transparency and openness of the process.

Financing of liabilities

A fund exists for waste management and decommissioning liabilities. The financing system for decommissioning and disposal is designed to provide funding for implementation of the Swedish waste management concept. The system has been revised with the new system under one framework act with a 3-year cycle, and a change in responsibility giving the government greater control.

Separate centralised funding available for orphan sources and other legacy waste.

Decommissioning

Two reactors currently undergoing decommissioning. Funding in place for decommissioning liabilities. Licence application for a repository for the decommissioning waste is planned.

Switzerland

The presentation from Switzerland focussed on the major exercise of finding sites for LLW and HLW geological repositories which are being undertaken in parallel. This includes extensive public consultation regionally including neighbouring countries. Significant public interaction takes place at various levels. Final approval by Swiss parliament is required followed by a potential referendum.

Ukraine

Staffing

Ukraine increased the number of regulatory staff employed since the 2nd Review Meeting. In order to attract and retain qualified staff, the regulator has introduced a bonus pay scheme.

The regulator has put in place an in-house training scheme for new staff. Existing staff undertake periodic training to ensure their skills and knowledge remain current.

Development of regulatory body

The State Nuclear Regulatory Committee (SNRC) exists as an independent regulator.

Development of waste management organisation

No central waste management organisation exists. UkrDO Radon and SSE Technocenter operate waste storage and disposal facilities. Spent fuel is presently managed at individual NPPs, with a centralised store to be constructed by the energy company.

National radioactive waste management plan

In 2008 Ukraine's Parliament approved a radioactive waste management program for the period 2008-17. The program encompasses infrastructure development at the VECTOR complex (within the Chernobyl exclusion zone) and regulatory improvements. Spent fuel and uranium mines are not included in this program.

Ukraine intends to construct a deep geological repository for spent fuel or high level waste arising from reprocessing of spent fuel. Preliminary siting work has been conducted; however, no sites are under active consideration.

Open processes

The SNRC has a public council comprised of representatives of NGOs and 10 media organisations. The council reviews all draft legislation and regulations. Public hearings may be held if the council makes a large number of comments. An annual topical meeting, with discussion topics proposed by the NGOs, is held.

Before any government decision on siting a significant waste facility, for example spent fuel storage or a deep geological repository, a local referendum must be held. The local government authority, by a two-thirds majority, may overturn the result of any such referendum.

Financing of liabilities

On 17 September 2008, Ukraine established the National Radioactive Waste Fund. All producers of waste must contribute to this fund in proportion to the volume and activity of waste produced. For waste produced prior to the fund's creation, producers have until 2019 to fund their responsibilities.

If a waste producer has made all required payments to the fund, no further charge is payable for disposing of waste. Should the fund prove insufficient to manage all waste generated in Ukraine, the State will fund the shortfall. Management of Chernobyl waste is funded by the State.

Uranium mining

Ukraine excludes uranium mining tailings from the scope of the Joint Convention. Consequently, it did not present information on mining activities during the review meeting.

Decommissioning

Decommissioning plans must be in place for all major installations such as nuclear power plants. Planning for decommissioning of all reactors at Chernobyl (excepting reactor number four) is well advanced, with dismantling expected to commence in 2046.

Ukraine anticipates an IAEA expert mission to review its plans for research reactor decommissioning.

United Kingdom

UK was represented at the highest level by:

- Chief Inspector of Nuclear installations, Mike Weightman
- Head of Radioactive Substances, Environment Agency, Dr Joe McHugh
- Head UKAEA
- Director Sellafield
- Head, Nuclear Decommission Agency,
- Senior Policy Officer, DECC Dept. Energy and Climate Change

The new build of NPPs in Britain has been evaluated on the basis a set of assumptions for costing and safety analysis. This includes an assumption that fuel will not be reprocessed in future however all backend options remain available but depend on business decisions of the operator.

The last two Magnox NPPs (four reactors) will close by 2015. Magnox reprocessing plan will be decommissioned after dealing with that fuel. There is currently contracted work for THORP reprocessing plant through 2016. If no new work is contracted it will be closed. Continuation of THORP would require a safety review as part of the ongoing safety review process. This is driven in part by OSPAR conventions. These activities form parts of the Sellafield Lifetime project.

There was a description of the failure at Sellafield that resulted in a large fine. NII has a policy of pursuing prosecution vigorously and regards this as essential to an open and transparent system. It also reinforced the necessity of maintenance of all barriers in a multi-layered defence in depth systems.

The UK spoke of a new Near-Surface Disposal Guidance (2009). UK has defined activity concentrations associated with its Waste Classification scheme. Public perception is that waste is not well handled or adequately funded.

There is consistency of Radiation Protection and Nuclear safety laws across the devolved jurisdictions of the UK, although environment laws can be different.

There is a staged regulatory process for development of a Geological disposal facility. The process involves firstly finding volunteer communities and then a thorough analysis of geological suitability before further action.

Ireland raised the issue of the recruitment campaigns implemented by the NII in recent times. NII responded that they had been able to get a 30% pay increase approved to ensure recruitment goals could be met.

USA

- A presentation not distributed instead the agreed overview matrix was distributed.
- Excellent overview of the large and complex US nuclear waste and SNF enterprise was delivered.
- Three regulatory bodies - EPA, NRC and DOE with many overlapping responsibilities. DOE is partly self-regulating in that for LLW, the Secretary of Energy is both Operator and Regulator through different responsibility chains.
- US has many waste repositories including three commercial radioactive waste facilities. General availability of disposal for Class A LLW, but 36 states cannot dispose Class B and C LLW. GTCC waste repository under investigation.
- HLW site at Yucca Mountain under NRC review, but studies of the site have been defunded.
- President has established a Blue Ribbon Committee to get best HLW site.
- DOE has its own waste sites including WIPP. DOE only uses one internal LLW class, TRU defined by Law as well as HLW. Will use NRC categories if waste goes to commercial repository.
- Individual protection standards for Yucca Mountain set at 0.15 mSv to 10000 years and 1 mSv from 10000 to 1000000 years. These appear to be dose constraints.
- No national clearance standards. Limited scope values used for some scenarios.
- USA has low worker dose rates.

- Good practices identified include
 - public/stakeholder consultation
 - domestic sealed source tracking, collection and disposal
 - global threat reduction initiative