

The Joint Convention, Its Global Impact and U.S Continuing Involvement- 16645

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ABSTRACT

The Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (hereafter called the Joint Convention) is an international convention, conducted under the auspices of the International Atomic Energy Agency (IAEA). It is one of a suite of international instruments dealing with nuclear safety and physical security, which serve to promote a global culture for the safe use of radioactive materials. Unlike other safety or security conventions, however, the Joint Convention deals exclusively with the end of the nuclear fuel cycle. The Joint Convention focuses on the lessons to be learned from past experience and existing facility operations, which can be implemented in the policies and designs for future operating facilities in the nuclear fuel cycle.

The U.S. has participated fully in the review process, as well as setting forth initiatives to sponsor increased ratification. The U.S. holds the current Joint Convention presidency for the Fifth Review Cycle. Because of the important benefits associated with active participation, the U.S. has strongly supported a Regional Conference Initiative outreach program to increase membership. We also provided an expert for each of the conferences to assist in advancing the message to non-Member States, in particular developing nations considering ratification.

The Joint Convention process also provides opportunities to identify future areas of bilateral and multilateral technical and regulatory cooperation with other Parties. Furthermore, the Joint Convention is consistent with U.S.

foreign policy considerations to support, as a priority, the strengthening of the worldwide safety culture in the use of nuclear energy.

INTRODUCTION

The Joint Convention on the Safety of Spent Fuel Management and on the Safety of

Radioactive Waste Management (Joint Convention) is an international convention, under the auspices of the International Atomic Energy Agency (IAEA). It is a companion to a suite of international conventions on nuclear safety and physical security, which serve to promote a global culture for the safe use of radioactive materials, in particular the Convention on Nuclear Safety (CNS). The Joint Convention grew out of the implementation of the CNS, which does not cover management of spent fuel or radioactive waste.

It is important to recognize that the Joint Convention is not a project of the IAEA, as is, for example, the Code of Conduct on the Safety and Security of Radioactive Sources. Instead, the Joint Convention is an official international treaty. However, the IAEA provides an important coordination role, in which it supplies not only the venue, but staff and other resources, to support the review and organizational meetings.

Those nations having ratified the Joint Convention are designated as "Contracting Parties." Nations that are not IAEA Member States may also become Contracting Parties to the Joint Convention, although none have done so. The general obligation on the Contracting Parties is to take appropriate steps to ensure that health, safety, and the environment are adequately protected throughout all stages of management of spent fuel, radioactive waste and disused sealed sources. Contracting Parties are required to document their national programs in reports, which are to be updated on three-year cycles.

The Joint Convention has been in force since June 2001 and five (5) cycles of review of the national reports prepared by Contracting Parties have since taken place. Since 2001, the number of Contracting Parties has steadily increased from the 25 original ratifiers to 33 at the First Review Meeting, 41 at the Second Review Meeting, 45 at the Third Review Meeting, 63 at the Fourth Review Meeting, 69 at the Fifth Meeting and currently 70 Contracting Parties. By comparison, the CNS had 78 Contracting Parties as of July 2015. Through the efforts of the Joint Convention to highlight best practices and create a collaborative learning environment, Contracting Parties have made progress in improving the safety of management of radioactive waste, spent fuel and disused sealed sources. One clear example of how industry and others can benefit from the lessons learned from the Joint Convention process is in the area of current and past decommissioning practices. Those problem areas that have been encountered in the actual decontamination,

demolition and dismantling of nuclear facilities can aid regulators, designers, constructors and operators approaches in making choices and decisions which can avoid duplicating these problems in the future. An area of emphasis has been incorporation of end-of-life considerations into the design, financing, and regulatory review of nuclear facilities.

The United States' National Report provides a convenient reference for summary level information on the spent fuel management and radioactive waste management programs and regulatory processes in the United States. The report is jointly prepared by the Department of Energy (DOE), Nuclear Regulatory Commission (NRC), and Environmental Protection Agency (EPA).

Contracting Parties are under no obligation to make their National Reports public. For those that have chosen to do so, their submitted National Reports can be accessed at the IAEA Joint Convention web site at: <http://www-ns.iaea.org/conventions/waste-jointconvention.htm>. Information on all five review cycles can be found at this web site.

PARTICIPATION & RESPONSIBILITIES OF THE CONTRACTING PARTIES

Obligations of the Joint Convention

The Joint Convention requires Contracting Parties to commit to three activities, which are performed on a three-year cycle (the most recent cycle culminated in May 2015). First, the Contracting Party must prepare a report detailing its national program for the management of spent fuel and radioactive waste, addressing aspects such as the statutory and regulatory framework, inventories of facilities and materials, and programmatic safety requirements (defense-related programs need not be addressed unless the Contracting Party chooses to do so). The Contracting Party must then submit its report for review and respond, in sufficient detail, to questions from the other Contracting Parties. Finally, the Contracting Party must give a presentation at a Review Meeting, highlighting aspects of its program, with particular focus on those elements that provoked questions. Questions after the presentation are also encouraged.

As the number of Contracting Parties has grown, there has been some concern that all Parties are not fulfilling these obligations. In some cases, resource limitations have affected the ability to generate a National Report or attend the Review Meeting. This is likely to remain an ongoing challenge. For the Fifth Review Meeting, 65 of 69 Contracting Parties submitted reports, while 61 Contracting Parties attended the Review Meeting.

Organization of the Joint Convention

Each review cycle of the Joint Convention is presided over by a President and two Vice Presidents, who are elected by the Contracting Parties. In addition, to facilitate the conduct of the Review Meeting, Contracting Parties are divided into Country Groups. Each Country Group will contain Contracting Parties representing a mix of development levels, including both those with advanced nuclear power programs and those that may only have sealed radioactive sources, with no intention of implementing nuclear power. Seven Country Groups were identified for the Fifth Review cycle.

Four officers are selected for each Country Group to oversee the conduct of the Review Meeting and to record specific information from each Contracting Party's presentation. The chair and vice chair preside over the Country Group sessions, the rapporteur records information from the session and prepares a summary report, and the coordinator works with the Contracting Parties in the Country Group in advance to ensure that they are prepared for the meeting. In addition, the officers of the different Country Groups meet prior to and throughout the Review Meeting to ensure that the entire process runs smoothly and operational issues are addressed promptly.

In addition, the Joint Convention Review Meetings have typically included separate evening sessions held after the Country Groups have adjourned for the day. The "Open Ended Working Group" (OEWG) is chaired by one of the Vice Presidents and provides Contracting Parties with the opportunity to propose modifications to the workings of the Joint Convention. Eight proposals were discussed during the Fifth Review Meeting. The OEWG reached consensus on four proposals, recommending: a Topical Meeting on disposal of spent fuel in countries other than the country of origin; evaluation of whether certain practices of the CNS related to transparency are transferrable to the Joint Convention; further examination of the experience and roles of rapporteurs and coordinators; and further action to promote entry into and adherence to the Joint Convention.

U.S. PERSPECTIVES

The U.S. has maintained a leadership role throughout the Joint Convention process. Consistent with U.S. foreign policy, the agencies believe it is important to take a leadership role in the Joint Convention Review Meeting of the Contracting Parties and in promoting ratification of the Joint Convention in the global setting, as well as in more focused regions.

The U.S. has held all offices of the Joint Convention and Country Groups over the five review cycles. The U.S. holds the current Joint Convention presidency for the Fifth Review Cycle. Mr. David Huizenga of DOE/National Nuclear Security Administration (NNSA) was elected to serve as the President of the Joint Convention. NRC staff members elected to serve as Joint

Convention officers during the Fifth Review Meeting included Mr. James Rubenstone as a Country Group Vice-Chair and Mr. Dominick Orlando as a Country Group Rapporteur. Ms. Ericka Bickford of DOE was chosen to serve as a Country Group Coordinator.

The U.S. has actively participated in the Joint Convention from the initial diplomatic conference through the current activity in preparation for the Sixth Review Meeting of the Contracting Parties. The Department of Energy (DOE) is designated as the lead agency for preparing the U.S. National Report. The NRC and EPA also participate in preparing the U.S. national report and in the review process. The Department of State is the diplomatic lead for the U.S. delegation during the Review Meeting.

Benefits of Active Participation

In general terms, participation in the Joint Convention process provides a benefit from harmonizing international approaches and in influencing the development of nuclear safety programs in developing countries, which strengthens the nuclear safety environment worldwide.

First is the opportunity to review the national spent fuel and radioactive waste management safety programs of other Contracting Parties and to benefit from their experience in situations similar to those faced by the U.S. The common framework suggested for reports to address the articles of the Joint Convention facilitates this review and the understanding of similarities and differences among Contracting Parties. Another specific benefit is the opportunity to learn about advances and innovations by other countries in radioactive waste disposal and spent fuel management. Although the U.S. has a wealth of experience, it is always looking for ways to enhance its programs.

As the Contracting Party with the most extensive nuclear power program, a well-developed legal and regulatory infrastructure, and a legacy of site remediation, the United States National Report and presentation receive a great deal of attention. The U.S. welcomes the opportunity to explain its policies and practices, and strives to be as forthcoming and transparent as possible in responding to many challenging questions, some of which rightly point out areas where improvements are possible. The peer review process has resulted in the identification of good practices and future challenges that all Contracting Parties should consider in the evolution and use of radioactive materials with concern for the exposed individuals and the environment in which these materials are used, stored, and disposed. The peer reviews concentrate on improving safety and not in assigning fault; the context is one of encouragement, consensus, and information exchange rather than criticism. The fact that the Country Group sessions have not been open to the public or press helps to encourage Contracting Parties to be fully responsive to questions from their peers.

A further benefit of the Review Meeting is the opportunity to reach a large number of peers to disseminate new information on topics of interest. At the Fifth Review Meeting, the Department of Energy hosted a topical presentation to give an update on the status of the Waste Isolation Pilot Plant, the outcome of the DOE internal investigation into the February 2014 underground fire and radionuclide release, and plans for the facility's reopening. The presentation was well-attended, and the audience appreciated the opportunity to ask questions and identify contacts for further discussion.

Promotion of Ratification

The U.S. has been very active in promoting the enlargement of the Joint Convention of Contracting Parties. By allocating funding, providing expertise, and creating audio-visual aids and tools, the U.S. has invested in the push for a wider acknowledgement and commitment to the safety provisions in the Joint Convention.

Most recently, to encourage ratification of the Joint Convention, a Regional Meeting to promote entry into the Joint Convention was held in October 2015 at Centurion, South Africa. Mr. David Huizenga, the current Joint Convention President, chaired the meeting, which focused on promoting membership and informed African nations about the benefits of the Joint Convention and encouraged them to join the Convention as Contracting Parties. Eight African countries are, or are in the process of becoming, Contracting Parties.

Finally, the current Joint Convention President has been tasked to report on the outreach activities and to discuss possible way forward for increasing the number of Contracting Parties as well as ways to increase the effectiveness of the review process for countries without a nuclear power program.

OVERARCHING ISSUES IDENTIFIED AT THE FIFTH REVIEW MEETING

Following the Fourth Review Meeting, four generic issues were identified for all Contracting Parties to address in their National Reports for the Fifth Review Meeting:

- Management of disused sealed sources;
- Safety implications of very long storage periods and delayed disposal of spent fuel and radioactive waste;
- International cooperation in finding solutions for the long term management and disposal of different types of radioactive waste and/or spent fuel; and
- Progress on lessons learned from the Fukushima accident, in particular regarding strategies for spent fuel management.

Similarly, the Country Groups identified a number of common themes and issues resulting from cumulative discussions at the Fifth Review Meeting, which will likely receive attention during the Sixth Review Cycle. The Contracting Parties highlighted these areas as Overarching Issues during the closing plenary session. These included the following:

Staffing, staff development, funding, and other human resource areas

Contracting Parties face challenges in establishing and maintaining qualified regulatory and operator work forces for spent fuel and radioactive waste management. Several points raised by Contracting Parties include:

1. New or growing programs need staff to take on new responsibilities, while more established programs often need to replace experienced workers as they retire or leave the work force through succession planning;
2. The same pool of experts supplies industry and regulators;
3. Knowledge transfer and training are very important and international/regional training opportunities are available;
4. Direct funding is important to regulatory independence.

Maintaining and increasing public involvement and engagement on waste management, to provide public confidence and acceptance

Consensus exists that public confidence is essential for successful implementation of spent fuel and radioactive waste management activities. The best ways to achieve such confidence can vary significantly among countries and remain a challenge. Several points raised by Contracting Parties include:

1. Importance of local community involvement;
2. Listening and active engagement in the process to the extent possible;
3. Transparency in communication and independence of the regulator;
4. Early and continuous engagement over the long term, including spent fuel and waste management discussion in the broader context of energy production;
5. Disposal issues require understanding of complex, long-term issues and consideration of novel approaches;
6. Importance of building independent stakeholder technical expertise; and

7. Retrieval and reversibility for disposal may support public confidence.

Contingency plans for management of radioactive waste from a significant nuclear or radiation accident

Accidents can produce unanticipated large quantities of radioactive waste as well as potentially damaged sources and nuclear fuel. Planning for managing waste from significant accidents remains generally underdeveloped and uneven among Contracting Parties. Several points raised by Contracting Parties include:

1. Planning is applicable to all Contracting Parties;
2. Planning should include both onsite and offsite;
3. The importance of a clear definition of the division of roles and responsibilities;
4. Basic, clear planning is recommended – excessive detail is unnecessary;
5. Storage capacity could be easily overwhelmed, but plan for some storage capability;
6. Cleanup criteria should be developed in advance; and
7. Consider how the response affects the radioactive waste volume that may be generated in the response.

Management of disused sealed sources

Management of disused sealed sources can be a significant challenge for all Contracting Parties. The return of disused sources to the supplier is seen as a useful means of reducing inventory, and several Contracting Parties have been very effective in implementing this approach. When this is not possible for all disused sources, collection and continued storage of disused sealed sources are ongoing issues. Several points raised by Contracting Parties include:

1. Return to supplier is not the only answer; long term management, e.g. disposal, must be considered;
2. Contracting Parties identified the importance of funding issues and financing;

3. International cooperation (including regional cooperation projects) is important, and may result in more interest by Contracting Parties in the Joint Convention; and
4. The interface between safety and security was recognized.

Management of and funding for decommissioning waste

As more facilities enter into decommissioning, managing the volume, complexity, or character of the waste generated through this process is a challenge. Early planning, preparation, and identification of resources for implementation are important so that these waste streams do not overwhelm existing waste management capabilities. Assuring sufficient funding for decommissioning activities is important for both implementers and regulators. Several points raised by Contracting Parties include:

1. Storage or disposal facilities need to be available for decommissioning - lack of disposal is not an excuse for deferred dismantling;
2. Disposal planning leads to lower costs and lower worker dose;
3. Availability of funding is important at the time of decommissioning; and
4. Early closure or operator insolvency causes further complications which the Contracting Parties must address.

Feasibility of a regional or multinational disposal facility

Use of a shared disposal facility may be an appealing solution for some Contracting Parties with limited amounts of radioactive waste or small quantities of spent fuel, for example, from a research reactor. Implementation of a shared facility faces many potential challenges and has been discussed for a long time in many fora. Several points raised by Contracting Parties include:

1. Some Contracting Parties consider that a multinational disposal option may have relevance in some situations;
2. Many Contracting Parties are very skeptical whether such a solution is implementable; and
3. Finding a willing host Contracting Party would be difficult.

Developing and implementing a holistic and sustainable management strategy for radioactive waste and spent fuel at an early stage

The management of radioactive waste and spent nuclear fuel, from generation through and ultimate disposition, is likely to extend over a long time period. Waste management plans need to be established very early and be sufficiently robust and adaptable to evolving societal expectations and concerns to ensure sustainability. Two points raised by Contracting Parties include:

1. Long term planning must be maintained and implemented for repository projects; and
2. Very few Contracting Parties have programs that have been executed without delay.

CONCLUSION

For the United States, participation as a Contracting Party to the Joint Convention provides many benefits. These range from working with other Parties to harmonize international approaches to achieve strong and effective nuclear safety programs on a global scale, to stimulating initiatives to improve safety systems within domestic programs, to learning about technical innovations by other Parties that can be useful to U.S. licensees, utilities, and industry in managing safety and its associated costs in waste management activities. The Joint Convention process is a continuous improvement process, through which all Contracting Parties cooperate to improve the safety of management of these materials, both domestically and globally.

Consistent with U.S. foreign policy considerations to support safety as a top priority in the use of nuclear energy worldwide, it is important to participate as a Contracting Party, to take a leadership role in the Review Meeting of the Contracting Parties, and to promote ratification of the Joint Convention in the global setting, as well as in more focused regions. With worldwide nuclear safety a top foreign policy priority, the United States continues to welcome future opportunities for bilateral and multilateral technical and regulatory cooperation.