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Joint Convention NEWS

JOINT CONVENTION ON THE SAFETY OF SPENT FUEL MANAGEMENT AND ON THE SAFETY OF RADIOACTIVE WASTE MANAGEMENT

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Introduction & Purpose

President's Message

Wishing a productive closing of the 4th Review Cycle of the Joint Convention and successful opening of the 5th Review Cycle

At this point in the Joint Convention's 4th Review Cycle, the activities of the officers for the 4th Review Meeting are nearing completion. As the President of the 4th Review Meeting, I am humbled by the strenuous efforts of all the Contracting Parties in support of the Joint Convention.

Since the 4th Review Meeting, 10 new Contracting Parties have submitted their accession instruments with the Depositary. I would like to extend a special welcome to all new Contracting Parties and I would also like to express my sincere appreciation of the efforts of the delegations of the new Contracting Par-ties who are currently preparing for the 5th Review Meeting.

During 2013, the first Intersessional Meeting and the first Topical Meeting were organized. These meetings were convened during the 4th Review Meeting of the Joint Convention, allowing the opportunity to discuss the diverse topics associated with the safety management of spent fuel and radioactive waste by Contracting Parties. It is firmly believed that both meetings were not only beneficial for upgrading the safety system of spent fuel and radioactive waste, but were also valuable for strengthening the international cooperation regime.

After the 4th Review Meeting, the Joint Convention leadership discussed improvements to the safety conventions with the leadership of the Convention on Nuclear Safety. Through fruitful discussion among both leaderships, and valuable support from experts from the Contracting Parties of both Conventions, we now have a clear path towards improving

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and strengthening both safety conventions. It is my firm belief that the leadership meetings will provide a great opportunity to continuously improve the effectiveness of the Joint Convention and the Convention on Nuclear Safety.

Despite these efforts and fruitful outcomes, the Joint Convention Contracting Parties still need to pro-mote closer cooperation between themselves. Special efforts should also be made to improve the management systems of spent fuel and radioactive waste through sharing of experiences among Contracting Parties under the Joint Convention.

The 5th Organizational Meeting is very close. Once again, availing this opportunity, I wish to express my sincere appreciation to the effort of all Contracting Parties and the Secretariat of the Joint Convention and I wish success for the upcoming 5th Organizational Meeting.

Chang Sun Kang

President

Fourth Review Meeting of the Joint Convention

Past Events & Meetings

Meeting of the Working Group of Experienced CNS and JC Officers (January 2013)

The Contracting Parties attending the 4th Review Meeting of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (JC) recommended that the leadership of the JC invite the leadership of the Convention of Nuclear Safety (CNS) to discuss a mechanism to ensure coherence between the rules governing the review process of the Joint Convention and those of the Convention on Nuclear Safety. The leadership of both Conventions agreed to establish a Working Group of Experienced Officers of both Conventions to analyse the current practices of the management of the review process.

Thirteen inputs as feedback from individual JC officers, two inputs of collective views of officers and JC delegates from Contracting parties, one combined JC and CNS input from one Contracting Party, and one input as feedback from CNS officers were received. The Working Group, consisting of about ten experienced officers of both Conventions and chaired by Andy Hall (United Kingdom), met in January 2013 to discuss and analyse the feedback received from different sources. Significant topics discussed at the meeting included:

- Review Process and Country Group Sessions
- Consistency of Processes
- JC and CNS Officers
- Preparation of the National Report

The Working Group successfully identified a number of potential areas for improvement, which were sent out in a Meeting Report and presented at the April 2013 Intersessional Meeting after approval from the leaders of both conventions.

Joint Convention General Committee Meeting (April 2013)

In connection with the Intersessional Meeting a General Committee (GC) Meeting was held in April 2013. The main objective of the meeting was to inform the GC members about recent developments, especially the Meeting of the Working Group of Experienced Officers, to illustrate the powers and limitations of different instruments in the JC process, and to discuss further steps evolving from the Intersessional Meeting which was held the following two days.

Intersessional Meeting (April 2013)

An Intersessional Meeting was held in Vienna from the 16th to 18th of April 2013. The Meeting was chaired by Andy Hall (United Kingdom) and attended by about 70 people from 32 Contracting Parties. The main reason for the meeting was to discuss thirteen different proposals from four Contracting Parties which were received by the Secretariat and which all aimed at an improvement of the Joint Convention review process. According to the International Atomic Energy Agency (IAEA) Information Circular (INFCIRC) Guidelines, the Intersessional Meeting had no power to take any decisions on these proposals. This is in the jurisdiction of a Review Meeting or an Extraordinary Meeting.

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As a result of the discussions, the Contracting Parties agreed that eleven of the proposals, mostly in a revised version, could be submitted for consideration at an Extraordinary Meeting if subsequently pro-posed. Such an Extraordinary Meeting of the Joint Convention could be held in conjunction with the Organizational Meeting of the Fifth Review Meeting of Contracting Parties to the Joint Convention in May 2014.

The Contracting Parties also discussed the Report of the Working Group Meeting of Experienced Officers of the Joint Convention and the Convention on Nuclear Safety, held in January 2013.

JOINT CONVENTION GENERAL COMMITTEE MEETING (SEPTEMBER 2013)

Another General Committee Meeting was held on the 20th of September 2013. Among other issues like recent developments and upcoming events, a significant amount of time was devoted to the activities of the Working Group of Experienced CNS and JC Officers that was established by the leadership of both conventions. Though the members of the General Committee acknowledged the value of the work that has been done so far, they recommended that the Working Group should not resume its work until the Contracting Parties have unequivocally agreed to the continuation of this work.

COMPREHENSIVE APPROACHES TO THE BACK END OF THE NUCLEAR FUEL CYCLE (OCTOBER 2013)

During the 4th Review Meeting of the Joint Convention, the Open-Ended Working Group (OEWG) reaffirmed the importance of holding Topical Meetings between Review Meetings to address specific topics identified at the 4th and each subsequent Review Meeting. These meetings should promote continuity and on-going dialogue among the Contracting Parties.

The first Topical Meeting was organised from 16th to 18th of October 2013 at the IAEA

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Headquarters in Vienna and provided a forum for the exchange of information between Contracting Parties on the safety contributions of various current and potential approaches to managing the back end of the fuel cycle. It was attended by 55 participants from 21 Contracting Parties, as well as representatives from OECD/NEA.

The presentations by delegates of their national approaches to the back end of the fuel cycle revealed the wide range of configurations adopted in different states. Some states with nuclear power programmes only employ open fuel cycles; others have a range of capabilities for a closed fuel cycle and reprocessing. Some states limit back-end fuel cycle activities to their national programmes, whereas others provide commercial fuel supply and reprocessing services to other states. Some states have adopted a wait and see policy regarding disposal options, whereas others are pressing ahead with initiatives to develop geological disposal facilities.

Despite the wide range of national approaches, a number of common themes emerged from the presentations and discussions of delegates. In particular, there was general agreement on the importance of openness and transparency, and conducting effective public engagement for identifying adequate strategies for spent fuel and radioactive waste. The delegates also agreed on the importance of making further progress with the development of disposal facilities for spent fuel and radioactive waste. Non-proliferation was also considered to be important. Where reprocessing is used, it is desirable to balance the rates of Pu production and incorporation into mixed oxide fuel to avoid building stocks of Pu.

As a conclusion, the delegates highlighted the responsibilities of Contracting Parties for the safe management spent fuel and radioactive waste, whatever approach is adopted for managing the back end of the fuel cycle. Both national and multinational approaches may, in principle, be consistent with the Joint Convention. The multinational approach to the back end of the fuel cycle is a developing concept, which is likely to be considered further over the coming years.

REGIONAL PROMOTIONAL MEETING IN GYEONG-JU (NOVEMBER 2013)

The Regional Meeting on the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (JC) in association with the Asian Nuclear Safety Network-Radioactive Waste Management (ANSN-RWMTG) Regional Workshop was held in Gyeong-Ju, Republic of Korea, from the 5th to 8th of November 2013. The purpose of the meeting was to inform Member States of the IAEA in the Asia Region about the JC and the benefits of becoming a Contracting Party (CP) to such a convention.

The meeting was organized by the IAEA with the Government of the Republic of Korea, in collaboration with the Korean Institute of Nuclear Safety (KINS) and the Nuclear Safety and Security Commission (NSSC).

The meeting was attended by 22 participants from 8 Member States (Bangladesh, Iran, Malaysia, Mongolia, Nepal, Pakistan, Philippines and Thailand) and 3 CPs (Indonesia, Japan, and Vietnam). The local government was represented by 15 delegates.

Dr. C.S. Kang, President of the 4th Review Meeting of the CPs of the JC, opened and presided the meeting. Dr. S.D. Sa, Director General of the NSSC, welcomed participants in representation of the Government of the Republic of Korea. Ms. G. Siraky was the Scientific Secretary of the meeting and welcomed participants on behalf of the

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IAEA. Mr. H. Jung, from KINS, led the local organization of the meeting, and Mr. K. Hioki, from the Japan Atomic Energy Agency, was an invited speaker by the IAEA.

The meeting was structured in six sessions: 1) introductory information on the JC; 2) the experience of CPs with the JC; 3) the status of radioactive waste management activities in Member States attending the meeting; 4) a practical exercise with a simulated Country Group session; 5) another practical session with a technical visit to the waste disposal site under construction at Wolsong; and 6) a topical session on education and training opportunities.

The meeting participants had good opportunities not only to get the information and to share the experience from the current CPs, but also to discuss the obstacles or the difficulties to be the CP and to figure out the solutions.

The meeting participants have acknowledged the assistance and support of the IAEA to this promotional activity and expressed appreciation to the efforts done to promote the JC and suggested to further continue with these efforts, as well as, providing opportunities to training on Waste Safety and Spent Fuel Safety. Finally, meeting participants expressed their gratitude to the host government institutions for the excellent organization of the event.

Upcoming Events & Meetings

EXTRAORDINARY MEETING (12–13 MAY 2014)

The Second Extraordinary Meeting will be held from the 12th to 13th of May 2014 at IAEA Headquarters in Vienna, Austria. The meeting is being convened by the Secretariat pursuant to Article 31(ii) of the Joint Convention which says that an extraordinary meeting of the Contracting Parties shall be held at the written request of a Contracting Party if this request is supported by a majority of the Contracting Parties. Forty-five out of 69 Contracting Parties had expressed their support by the end of January 2014.

The Extraordinary Meeting will be held in conjunction with the Organizational Meeting of the 5th Review Meeting of the Contracting Parties to the Joint Convention. The purpose of the Extraordinary Meeting is to consider revisions to the *Rules of Procedure and Financial Rules,* as well as to the *Guidelines Regarding the Review Process* and the *Guidelines Regarding the Form and Structure of National Reports*, based on the proposals discussed and revised at the Intersessional Meeting held from the 16th to 18th of April 2013.

ORGANIZATIONAL MEETING (14–15 MAY 2014)

Pursuant to paragraph III.5 of the *Guidelines Regarding the Review Process,* an Organizational Meeting is to be held approximately eight months prior to each Review Meeting. The purpose of this meeting is to allocate Contracting Parties to country groups and to elect the Review Meeting President and Vice-Presidents, as well as Country Group Coordinators, Rapporteurs, Chairpersons and Vice-Chairpersons. This time, the Organizational Meeting will be held from the 14th to 15th of May 2014 at IAEA Headquarters in Vienna, Austria in conjunction with the Second Extraordinary Meeting.

STRESS TEST FOR SPENT FUEL AND RADIOACTIVE WASTE MANAGEMENT FACILITIES IN GERMANY

Background

The earthquake off the Japanese coast on March 11, 2001, and the subsequent flooding caused by a tsunami, triggered a nuclear disaster at the Fukushima site. Although the initiating events, especially the magnitude of the earthquake and the height of the tidal wave, are not directly applicable to conditions in Europe and Germany, the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) considered it necessary to not only perform a robustness assessment for German nuclear power plants, but also a stress test for spent fuel and radioactive waste management facilities in Germany, as well as for the uranium enrichment plant in Gronau and the fuel fabrication plant in Lingen. The Nuclear Waste Management Commission (ESK) was commissioned to develop appropriate review concepts for those facilities.

With this stress test, it was not intended to assess the design requirements reviewed as part of the licensing procedure. Instead, the ESK assessed the robustness of plants and facilities against impacts that go beyond the design requirements in the licensing procedure. In this way, it was investigated how the facilities behave under beyond design basis loads and whether a sudden rise of the radiological effects outside the facility due to the failure of components or measures is foreseeable. For this purpose, existing precautionary measures and accident management measures provided were also considered in the stress test.

Approach

Due to the large number and diversity of facilities and plants, as well as the wide range of radioactive inventories to be considered in the stress test, the work was divided into two parts. In the first part, nuclear fuel supply facilities, storage facilities for spent fuel and heat-generating radioactive waste and facilities for the treatment of spent fuel were examined and the results are documented in an ESK statement. Storage facilities for low- and intermediate-level radioactive waste, conditioning facilities for low- and intermediate-level radioactive waste, and repositories for radioactive waste (Asse II mine, Morsleben repository for radioactive waste (ERAM) and repository Konrad mine) are were considered in the second part.

The examination was based on the answers to a list of questions which were provided by the operators of the facilities. In addition to questions on the load cases of earthquakes, flooding, heavy rain, other weather-related events, loss of electrical power, internal fires, external fires, aircraft crashes, and blast waves, the questionnaire included the stress levels and degrees of protection referred to by the ESK in its assessment. The assessment was made with regard to the following questions:

a) Will the vital functions be maintained at the different stress levels?

b) What maximum effects are realistically conceivable at the different stress levels?

c) Are cliff edge effects foreseeable and have they been considered?

d) On which basis has the assessment been made and is it plausible and comprehensible?

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Results

The general results of the stress test can be summarized as follows:

- The analyses and assessments carried out by the ESK have shown that the storage facilities for spent fuel and heat-generating waste comply with the highest stress levels and reach the highest degree of protection for almost all load cases. The storage of spent fuel and heat-generating waste is based on a robust protection concept according to which compliance with the general protection goals during storage in case of specified normal operation and design basis events is primarily ensured by the thick-walled metal casks. The design of the casks also ensures that even in case of beyond design basis events, no major disaster control measures are required.
- The facilities for the treatment of spent fuel elements, the Gorleben pilot conditioning plant (PKA), and the parts of the Karlsruhe reprocessing plant not dismantled yet, as well as the two fuel supply facilities, the fuel fabrication in Lingen and the uranium enrichment plant in Gronau, have substantial margins against beyond design basis events. For many postulated load cases, they comply with the highest stress level and reach the highest degree of protection.
- Of the facilities and plants considered in the stress test there were no failures of components or measures due to the postulated beyond design load cases that may lead to a sudden rise of the radiological effects outside the facility. Furthermore, no deficiencies in the design requirements of the facilities and plants considered have become apparent in the stress test.

The ESK statements on both parts with a more detailed description of the approach and the results are published on the ESK website (Part 1: www.entsorgungskommission.de/englisch/downloads/eskstresstestteil114032013revenhp.pdf; Part 2: www.entsorgungskommission.de/englisch/downloads/esksnstresstestteil211072013revfass18102013en.pdf).

Transport and storage casks in the Transport Cask Storage Facility Lingen
(Copyright: RWE Power AG)

IMPLEMENTATION OF THE NEW SAFE CONFINEMENT PROJECT AT CHERNOBYL NUCLEAR POWER PLANT

The New Safe Confinement (NSC) project is the main project of international Shelter Implementation Plan (SIP). NSC project implementation is realized within the framework of two NSC commissioning stages (CS):

1. **NSC CS-1** – design and construction of the protective facility with technological life-support systems and required infrastructure (Arch).
2. **NSC CS-2** – design of infrastructure for early deconstruction of unstable structures of the Object "Shelter".

Currently, main work is carried out within the framework of NSC CS-1.

Joint venture NOVARKA, comprised of the two French companies, VINCI Construction Grands Projets and Bouygues Travaux Publics, is performing NSC CS-1 design and construction works.

The NSC Arch is being assembled at some distance from the NSC in the low ionizing exposure area.

Currently, lifting towers foundations concreting has been completed, as well as NSC foundations in the erection and transfer zone; continuous flight auger (CFA) piles for the south service zone foundation, and assembly of the east Arch steel structures have been started, including external and internal NSC cladding, and preparatory works for technological building construction.

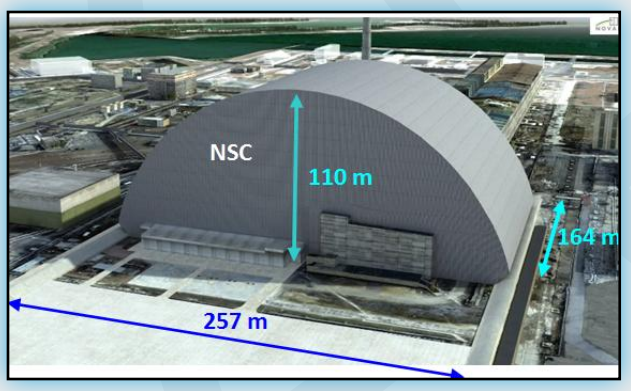
Figures below provide information regarding current status of the arch construction. First, jacking of the Arch to approximately 53 m height was performed in November 2012. Second, jacking of the eastern part of the Arch to 85 m took place in June 2013. Third, jacking to 109 m took place at the end of the third quarter of 2013. The assembled eastern part of the Arch was moved to the parking area at the end of the year 2013.

Further information:

- Dimensions of the NSC structure: height ~ 110 m, east-west length ~ 164 m, north-south width is 257 m.
- Total weight of the NSC Arch (including internal systems) is about 33,000 tons, including ~ 23,000 tons of the steel structures.
- Assembled structure will be slid from the Arch erection zone to the Arch design position by rails for about 507 m.

Following completion of the new safe confinement, the existing Object "Shelter" will be covered with a new protective facility, which will allow the deconstruction of the existing Object "Shelter" structures to begin under its tight enclosure.

Second jacking stages of the Arch east part



General NSC view (layout)

MANAGEMENT OF RADIOACTIVE SOURCES AT THE END OF THEIR LIFECYCLES; UKRAINIAN EXPERIENCE AND LESSONS LEARNED

Only the following ways of management of radioactive sources (RS) after the expiration of their lifecycle are allowed: temporary secured storage on the site of facility (not more than 6 months); RS return to the country of production according to the agreement with the supplier; RS transfer to the special enterprises for radioactive waste management and disposal.

National experience has proven that the most reliable methods to ensure safe and secure management of spent RS is: (1) allocation of funds in advance for future disposal of new (imported and used after year 2000) spent RS; and (2) development and implementation of state campaigns for consolidation of historical (imported before the 1990s) spent RS at safe and secured sites of the enterprises for radioactive waste management.

Safe management of spent radiation sources prior to their transfer to specialized radwaste management enterprises, is financially ensured by users paying taxes to the Radioactive Waste Management Fund before procurement of a new spent RS. The other way is providing the regulatory body with a copy of the contract for the return of the RS to the supplier abroad at the end of RS use. The tax code of Ukraine requires that users pay taxes for temporary storage of radioactive sources after their lifetime expiration to encourage spent RS transfer to the specialized radwaste management enterprises in a timely manner.

To resolve the issue of historical RS, specific state programs and complementary international technical assistance projects were successfully implemented from 2009-2012. Two such projects were *Decommissioning of Irradiators and Ensuring Secure Storage of Spent Radioactive Sources,* and *Improving Security of Disused Radioactive Sources in Ukraine.* These projects included conducting a full range of activities with radioactive sources, namely: removing radioactive sources from irradiators, their further transfer from the bankrupt companies; placing radioactive sources in appropriate containers; survey (check for leak tightness) and identification of sources; transportation of containers with sources to the specialized enterprise for radioactive waste management for future safe and secure storage; and receiving and placement of the containers with radioactive sources in the storages of the specialized enterprises.

As a result of these projects, 14 755 Disused Sealed Radioactive Sources from different regions of Ukraine with total activity of 1.27 PBq were collected and placed for safe and secure storage at regional Ukrainian State Association "Radon" facilities between the years 2009 and 2013.

Statistics

Five New Contracting Parties

The Joint Convention consists of 69 Contracting Parties (CPs) as of January 2014 (subject to the entry into force). Five new CPs (Armenia, Malta, Mauritius, Oman, and Vietnam) have joined since the last issue of the Joint Convention Newsletter in November 2012.

Recently Joined Contracting Parties		
Continent	*Country*	*Entry into force*
Africa	Mauritius	14 July 2013
Asia	Armenia	20 August 2013
Asia	Oman	26 August 2013
Europe	Malta	16 September 2013
Asia	Vietnam	7 January 2014

Fifth Review Process Schedule

12–13 May 2014

The Second Extraordinary Meeting

14–15 May 2014

Organizational Meeting for the Fifth Review Meeting

10 October 2014

Deadline for Submission of National Reports

10 February 2015

Deadline for Submission of Questions and Comments on National Reports

10 April 2015

Deadline for Submission of Answers for National Reports

11 May 2015

Commencement of the Fifth Review Meeting

Joint Convention News

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Thank you to the Contracting Parties who contributed to this issue of Joint Convention News.