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ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

The OECD is a unique forum where the governments of 30 democracies work together to address the economic, social and environmental challenges of globalisation. The OECD is also at the forefront of efforts to understand and to help governments respond to new developments and concerns, such as corporate governance, the information economy and the challenges of an ageing population. The Organisation provides a setting where governments can compare policy experiences, seek answers to common problems, identify good practice and work to co-ordinate domestic and international policies.

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NUCLEAR ENERGY AGENCY

The OECD Nuclear Energy Agency (NEA) was established on 1st February 1958 under the name of the OEEC European Nuclear Energy Agency. It received its present designation on 20th April 1972, when Japan became its first non-European full member. NEA membership today consists of 28 OECD member countries: Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Luxembourg, Mexico, the Netherlands, Norway, Portugal, Republic of Korea, the Slovak Republic, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The Commission of the European Communities also takes part in the work of the Agency.

The mission of the NEA is:

- to assist its member countries in maintaining and further developing, through international co-operation, the scientific, technological and legal bases required for a safe, environmentally friendly and economical use of nuclear energy for peaceful purposes, as well as
- to provide authoritative assessments and to forge common understandings on key issues, as input to government decisions on nuclear energy policy and to broader OECD policy analyses in areas such as energy and sustainable development.

Specific areas of competence of the NEA include safety and regulation of nuclear activities, radioactive waste management, radiological protection, nuclear science, economic and technical analyses of the nuclear fuel cycle, nuclear law and liability, and public information.

The NEA Data Bank provides nuclear data and computer program services for participating countries. In these and related tasks, the NEA works in close collaboration with the International Atomic Energy Agency in Vienna, with which it has a Co-operation Agreement, as well as with other international organisations in the nuclear field.

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The Review Conference Mechanism in Nuclear Law: Issues and Opportunities

*by Carlton Stoiber**

Over the past several decades the international community has increasingly come to rely on periodic multilateral conferences or meetings[1] as a means for reviewing implementation of a wide variety of legal instruments, including those addressing nuclear non-proliferation, safety, waste management, physical protection and security. Also, the parties to some instruments that do not explicitly mandate review meetings have decided to conduct *de facto* review meetings to enhance implementation. Although the structure and procedures of these meetings differ in some particulars, they reflect a number of common objectives, organisational arrangements and procedures. This paper seeks to assess the major issues arising from reliance on the review conference[2] mechanism as a measure for enhancing the effectiveness of multilateral legal instruments, particularly those in the nuclear field. In view of the perceived failure of the 2005 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons and the need to avoid a similar result at the upcoming 2010 Review Conference, it is hoped that this analysis will provide a timely – and possibly even useful – "review" of the review conference mechanism.

Due to space restrictions it has been necessary to set some limits for this article. Therefore, review conferences for treaty regimes outside the nuclear area can only be briefly and selectively addressed. They are discussed here in recognition of the broader international law context in which nuclear instruments are implemented. Also, only limited attention is given to amendment conferences, a feature of virtually all multilateral treaties. Some amendment conferences (as with the one which

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* Carlton Stoiber is an independent consultant on international and nuclear law. He previously headed several offices in the U.S. Department of State and U.S. Nuclear Regulatory Commission dealing with nuclear issues, was active in drafting the Convention on Nuclear Safety and post-Chernobyl Emergency Assistance and Early Notification Conventions, and has served on U.S. delegations to NPT and CNS review meetings. He acknowledges the generous advice and comments on the draft of this paper from two expert colleagues, Odette Jankowitsch-Prevor and Patrick Reyners. The author alone is responsible for the facts and opinions expressed in this article.

1. There is no meaningful distinction between these terms. Whether a review event is called a "conference" or a "meeting" depends solely on the terminology used in the relevant instrument.

2. The term review conference is sometimes abbreviated as "revcon" in this paper.

resulted in the 2005 Amendment to the Convention on the Physical Protection of Nuclear Material) may share some of the objectives and procedures of review conferences. However, they are sufficiently different in scope and character to warrant treatment elsewhere. This is also the reason why the revision conferences provided for in the conventions on civil liability for nuclear damage are not discussed here.[3]

A. International instruments utilising the review conference/meeting mechanism

This section provides a brief survey of a range of multilateral treaty regimes in which the review conference mechanism has been utilised over the past several decades. As will be seen, review meetings have been established on a *de facto* basis for some instruments not specifically mandating periodic review. Also, some multilateral meetings not linked to a specific instrument can have attributes of a review meeting. The list reveals a lengthy experience with such meetings, covering a very broad range of subject matters. As stated, due to space restrictions, discussion of the detailed features of these numerous regimes (particularly those outside the nuclear field) is not possible. However, even a summary analysis can identify common issues and approaches that could be instructive in evaluating how the review conference mechanism might be enhanced to improve implementation of relevant legal instruments, particularly those in the nuclear field.

1. Nuclear instruments

Convention on the Physical Protection of Nuclear Material

The Convention on the Physical Protection of Nuclear Material[4] (hereinafter CPPNM) was negotiated in the late 1970s and was opened for signature in March of 1980. However, a lengthy period ensued before the 21 instruments of ratification, approval, acceptance or accession were received to permit entry into force under Article 19(1). The convention's review conference provision states:

> "A conference of States Parties shall be convened by the depositary five years after the entry into force of this Convention to review implementation of the Convention and its adequacy as concerns the preamble, the whole of the operative part and the annexes in light of the then prevailing situation", CPPNM, Article 16(1)
>
> and
>
> "At intervals of not less than five years thereafter, the majority of States Parties may obtain, by submitting a proposal to this effect to the depositary, the convening of further conferences with the same objective", CPPNM, Article 16(2).[5]

The first review conference mandated under Article 16 was conducted in September of 1992 with a further conference on physical protection convened in November of 1997. As a result of the

3. See Paris Convention on Third Party Liability in the Field of Nuclear Energy, Article 22; Vienna Convention of Civil Liability for Nuclear Damage, Article XXVI; and Convention on Supplementary Compensation for Nuclear Damage, Article XXIV.

4. IAEA Document INFCIRC/274/Rev.1, May 1980, entered into force in 1987.

5. The 2005 Amendment to the CPPNM reproduces this provision, but with quinquennial conferences commencing after entry into force of the amendment.

second conference, and deliberations in the IAEA Board and General Conference, it was decided to move forward with an amendment of the convention. Beginning with an open-ended working group convened by the IAEA Director General in 1999, states parties developed an amendment that was adopted at a diplomatic conference in July of 2005. The CPPNM amendment process, extending over a period of several years, represents a *de facto* review conference process that involved both an assessment of the instrument and measures needed to better achieve its objectives. In the end, new provisions were added to extend the convention's scope to domestic activities and facilities, to cover acts of sabotage, to add fundamental principles of physical protection, to clarify definitions and to add punishable acts. The amendment will enter into force upon acceptance by two-thirds of CPPNM states parties.[6]

Treaty on the Non-Proliferation of Nuclear Weapons

The Treaty on the Non-Proliferation of Nuclear Weapons (hereinafter NPT) was opened for signature in 1968 and entered into force on 5 March 1970. With 191 parties, the NPT is the most widely adhered to multilateral arms control instrument. In the simplest terms, the NPT regime rests on four fundamental obligations or rights. First, nuclear-weapon states parties[7] undertake not to transfer nuclear weapons or other explosive devices to any recipient (Article I). Second, non-nuclear-weapon states parties undertake not to acquire or develop nuclear weapons or other explosive devices (Article II), with verification through the application of IAEA safeguards (Article III). Third, the right of all parties to develop the peaceful uses of nuclear energy is affirmed (Article IV). Fourth, all parties undertake to pursue negotiations on effective measures to cease the nuclear arms race, achieve nuclear disarmament and a treaty on general and complete disarmament (Article VI).[8] The generality (some might say "vagueness") of these provisions, as well as differing views on the relationship among them, has resulted in a continuing and often contentious debate over interpretation and application of the treaty.

Except for its Article III safeguards obligation (verified by the IAEA), the NPT does not contain any specific measures for enforcement, such as procedures for assessing compliance or imposing sanctions or extending incentives. Thus, compliance issues have most often been approached outside the NPT regime itself, either in the United Nations Security Council or in the policy-making organs of the International Atomic Energy Agency (e.g. for alleged safeguards violations). However, the states parties have assessed implementation at periodic review conferences. The relevant provision states:

> "At intervals of five years thereafter, a majority of the Parties to the Treaty may obtain, by submitting a proposal to this effect to the Depositary Governments, the convening of further conferences with the same objective of reviewing the operation of the Treaty", NPT, Article VIII(3).

6. With 140 current parties, the CPPNM Amendment will require 94 acceptances.

7. Under Article IX(3), the five states which had manufactured and exploded a nuclear weapon prior to 1 January 1967, namely China, France, Russian Federation (as successor to the former Soviet Union), United Kingdom and United States.

8. These four basic obligations are sometimes reduced to three by conflating the first two into one "non-proliferation" cluster, adding peaceful uses and disarmament to form the "NPT trinity". See draft final report of the Preparatory Committee for the 2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, NPT/CONF.2010/PC.III/CRP.7 at para. 18 (13 May 2009).

Published material on the NPT and its eight review conferences is voluminous, involving virtually an "industry" of arms control and non-proliferation experts and organisations, not to mention national governments and international organisations.[9]

Convention on Nuclear Safety

The Convention on Nuclear Safety (hereinafter CNS)[10] was negotiated between 1991 and 1994 as a somewhat delayed response to nuclear power reactor accidents at Three Mile Island in the United States in 1979 and Chernobyl in the Soviet Union (now Ukraine) in 1986.[11] The terms of this convention have three main objectives:

I. To achieve and maintain a high level of nuclear safety worldwide through the enhancement of national measures and international co-operation including, where appropriate, safety-related technical co-operation.

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9. Of the many articles and publications addressing the NPT, the following are both readily available and include analyses of the review conference mechanism over the life of the treaty: Nuclear Threat Initiative/Center for Non-Proliferation Studies of the Monterey Institute of International Studies, *NPT Tutorial* at Chapter 4 – Compliance and Growth – NPT Review Conferences at www.nti.org/h_learnmore /npttutorial/chapter04_01.html; Rockwood, "Non-Proliferation Treaty 1990 Review Conference: Looking Forward Towards 1995", *Nuclear Law Bulletin* No. 46, at pages 25-34; Rockwood, "The Nuclear Non-Proliferation Treaty: A Permanent Commitment to Disarmament and Non-Proliferation, *Nuclear Law Bulletin* No. 56, at pages 9-18; Pinel, "The Treaty on the Non-Proliferation of Nuclear Weapons and the Process for Its Enhanced Review on the Eve of the 2000 Review Conference", *Nuclear Law Bulletin* No. 65, at pages 13-19; Rauf, "The 2000 Non-Proliferation Treaty Review Conference", *The Non-Proliferation Review*, Volume 7, Number 1 (2000); Wulf, "Observations from the 2000 NPT Review Conference", in *Arms Control Today* at www.armscontrol.org/act/2002_11/wulf; Stoiber, "The Evolution of NPT Review Conference Final Documents, 1975-2000", *The Nonproliferation Review,* Volume 10, Number 3 (2003), at pages 126-166; Müller, "The 2005 NPT Review Conference: Reasons and Consequences of Failure and Options for Repair" Weapons of Mass Destruction Commission Study No. 31 at www.wmdcommission.org/files/No31; "Review Conference for Nuclear Non-Proliferation Treaty Concludes with Many States Expressing Deep Disappointment at Outcome", United Nations Information Service, (30 May 2005) at www.unis.unvienna.org/unis/pressrels/2005/dc2969.html; Weapons of Mass Destruction Commission, *Weapons of Terror: Freeing the World of Nuclear, Biological and Chemical Arms,* (2006), Chapter 3 – Nuclear Weapons at pages 60-109; Simpson and Nielsen, "The 2005 NPT Review Conference: Mission Impossible?", *The Nonproliferation Review*, Volume 12, Number 2 (2005) at pages 271-303; Duarte, "The Nuclear Nonproliferation Treaty at Forty: Addressing Current and Future Challenges", at www.armscontrol.or/events/20080617_Luncheon_Transcript.

10. IAEA Document INFCIRC/449, 5 July 1994; entered into force on 24 October 1996. See also, 33 International Legal Materials, page 1514 (1994).

11. Detailed analysis of the CNS is available in the following articles: Jankowitsch, "The Convention on Nuclear Safety," *Nuclear Law Bulletin* No. 54 (1994) at page 9; Reyners, "La Convention de 1994 sur la sûreté nucléaire", *99 Revue Générale de droit international public* (1995) at page 605*;* Stoiber, "International Convention on Nuclear Safety: National Reporting as the Key to Effective Implementation", in Horbach, N., ed., *Contemporary Developments in Nuclear Energy Law: Harmonising Legislation in CEEC/NIS* (1999), page 97; Handl, "The IAEA Nuclear Safety Conventions: An Example of Successful 'Treaty Management'?", *Nuclear Law Bulletin* No. 72 (2004), page 7; Rautenbach, Tonhauser and Wetherall, "Overview of the International Legal Framework Governing the Safe and Peaceful Uses of Nuclear Energy: Some Practical Steps", OECD 2006/NEA No. 6146 at page 7.

II. To establish and maintain effective defences in nuclear installations against potential radiological hazards in order to protect individuals, society and the environment from harmful effects of ionizing radiation from such installations.

III. To prevent accidents with radiological consequences and to mitigate such consequences should they occur.[12]

The convention covers land-based civil nuclear power plants[13] and has been adhered to by 64 states, as of June 2009, notably including all states currently operating nuclear power reactors. Early in its negotiation, the CNS came to be characterised as an "incentive" convention, rather than a "regulatory" or "sanctions" instrument, relying on periodic peer review meetings to assess the effectiveness of its implementation. The CNS review meeting provision states:

> "The Contracting Parties shall hold meetings (hereinafter referred to as 'review meetings') for the purpose of reviewing the reports submitted pursuant to Article 5…" CNS, Article 20(1)
>
> and
>
> "At each review meeting, the Contracting Parties shall determine the date for the next such meeting. The interval between the meetings shall not exceed three years" CNS, Article 21(3).

Since its entry into force in 1996, four triennial review conferences (in 1999, 2002, 2005 and 2008) have been conducted. As a result of these review conferences, the organisational and procedural structure of the CNS process has been enriched through the promulgation of several key documents, including guidelines on the review process,[14] guidelines on national reports[15] and rules of procedure.[16]

Joint Convention on Spent Fuel and Waste Management

A companion instrument to the CNS,[17] the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (hereinafter Joint Convention) was negotiated between 1995 and 1997 and entered into force 18 June 2001.[18]

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12. See CNS Article 1: Objectives.

13. See definition of "nuclear installations" in Article 2(i).

14. "Guidelines regarding the Review Process under the Convention on Nuclear Safety", IAEA document INFCIRC/571/Rev.3 (11 January 2007).

15. "Guidelines regarding National Reports under the Convention on Nuclear Safety", IAEA document INFCIRC/572/Rev.2 (2 September 2002).

16. "Convention on Nuclear Safety: Rules of Procedure and Financial Rules", IAEA document INFCIRC/573/Rev.3 (11 January 2007).

17. See CNS preambular paragraph IX which affirmed the need to begin promptly the development of a convention on the safety of radioactive waste management.

18. A discussion of the negotiation of the Joint Convention and its basic provisions is contained in Tonhauser and Jankowitsch, "The Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management", *Nuclear Law Bulletin* No. 60.

The Joint Convention review conference provision states:

"The Contracting Parties shall hold meetings for the purpose of reviewing the reports submitted pursuant to Article 32" Joint Convention, Article 30(1)

and

"At each review meeting the Contracting Parties: shall determine the date for the next such meeting, the interval between review meetings not exceeding three years" Joint Convention, Article 30(2)(i).

As of the date of this article, the Joint Convention was adhered to by 49 states parties and had conducted review meetings in 2003, 2006 and 2009.[19] As with the CNS, the parties to the Joint Convention have developed a number of documents to guide the work at meetings.[20]

Nuclear-Weapon-Free Zone Treaties

Over the past four decades, a number of regional treaties have been negotiated for the purpose of excluding nuclear weapons from certain geographical areas of the world. The five such treaties currently in force or in the process of approval include:

- The Latin American Nuclear-Free Zone (Tlatelolco) Treaty (1967)
- The South Pacific Nuclear Weapon-Free Zone (Rarotonga) Treaty (1986)
- The Southeast Asia Nuclear Weapon-Free (Bangkok) Treaty (1997)
- The African Nuclear-Weapon Free Zone (Pelindaba) Treaty (opened for signature 1996)
- The Central Asia Nuclear-Weapon-Free Zone Treaty (opened for signature on 2 September 2006 and entered into force on 21 March 2009)

The review process varies somewhat among these instruments and most have established bodies to oversee their implementation on a continuing basis. For example, Article 9 of the Tlatelolco Treaty establishes a general conference with continuing supervisory responsibilities. Similarly, Article 14 of the Pelindaba Treaty creates a conference of the parties. Article 10 of the Rarotonga Treaty provides for a consultative committee to meet periodically as needed. Article 10 of the Central Asia Treaty provides for annual or extraordinary consultative meetings of the parties. Only the Bangkok Treaty provides for a periodic review along the lines of the NPT, CNS or Joint Convention (ten years after entry into force pursuant to Article 20).

In April 2005, the states parties and signatories to all four of the nuclear weapons-free-zone treaties in force at the time met in Mexico City to enhance mutual co-operation and co-ordination in advancing commitments of the several treaties to non-proliferation and disarmament. Though, strictly speaking, not a review conference,[21] the participants adopted a declaration establishing, *inter alia,* a

19. See the Summary Reports of the three meetings in documents JC/RM.106/Final Version (14 November 2003), JC/RM.2/03/Rev. 1 (24 May 2006) and JC/RM3/02/Rev2 (20 May 2009) available on the IAEA documents website.

20. See Rules of Procedure and Financial Rules for the Joint Convention at IAEA document INFCIRC/602/Rev.2 (24 January 2006) and Guidelines Regarding the Review Process at IAEA document INFCIRC/603/Rev.3 (18 July 2008).

21. The timing of the Mexico City conference suggests that it was intended, at least in part, to influence debates at the 2005 NPT Review Conference convened immediately afterwards.

mechanism for future co-ordination to be implemented on a rotating basis by the four regional organisations.[22]

Early Notification and Assistance Conventions

The review conference mechanism is absent from the text of the two companion conventions negotiated following the 1986 reactor accident at Chernobyl to provide early notification[23] and assistance in the case of a nuclear accident.[24] However, the equivalent of such a mechanism has been established recently under the auspices of the IAEA through the convening of biennial meetings of competent authorities designated under the conventions.[25] The establishment of this mechanism illustrates how multilateral legal instruments and arrangements can evolve to meet the perceived needs of their parties, even without undertaking the time-consuming and often difficult process of formal amendment. Four meetings of the competent authorities have been conducted[26] and a National Competent Authority Coordinating Group created to facilitate co-operation and help implementation of an action plan approved by the IAEA Board of Governors.[27]

Code of Conduct on Research Reactors

At the suggestion of the chairman of the IAEA's International Nuclear Safety Advisory Group (INSAG) an initiative under the Agency's auspices resulted in development of a non-binding Code of Conduct on the Safety of Research Reactors adopted by the IAEA General Conference in 2004.[28] The concept of a review meeting for the Code of Conduct was advanced at a meeting of the CNS where the parties adopted a resolution requesting the IAEA Director General to convene meetings of member states to discuss how to best assure the effective application of the "Code of Conduct on the Safety of Research Reactors".[29] An open-ended meeting for this purpose was conducted in Vienna in December 2005 where the participants adopted a recommendation that periodic meetings should be organised to discuss topics related to the code, to exchange experience and lessons learned including best practices and to propose assistance to overcome any identified difficulties.

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22. Further information on this initiative is available on the website of OPANAL (Organismo para la Proscripción de las Armas Nucleares en la América Latina y el Caribe/Organization for the Prohibition of Nuclear Arms in Latin America and the Caribbean) at www.opanal.org/index-i.html.

23. Convention on Early Notification of a Nuclear Accident, IAEA Document INFCIRC/335 (18 November 1986) (hereinafter Early Notification Convention).

24. Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency, IAEA Document INFCIRC/336 (18 November 1986) (hereinafter Assistance Convention).

25. See Article 7 of the Early Notification Convention and Article 4 of the Assistance Convention.

26. In June 2001, July 2003, July 2005 and July 2007.

27. Information on the procedures under the Early Notification and Assistance Conventions may be found on the IAEA website at www-ns.iaea.org/conventions/emergency.htm.

28. See Rautenbach, Tonhauser and Wetherall, *op. cit.*, at footnote 9 at pages 13-14.

29. See Deitrich, "The Open-ended Meeting on Effective Application of the Code of Conduct on the Safety of Research Reactors", a power-point presentation at www.ansn.org/ansn.org/Common/Documents/apmd/asia288p3.pdf; and Loy, "Implementation of the Code of Conduct on the Safety of Research Reactors", in Effective Nuclear Regulatory Systems: Facing Safety and Security Challenges-Proceedings of an International Conference, Moscow 27 February – 3 March 2006, International Atomic Energy Agency, Vienna at pages 129-135 (2006).

Code of Conduct on Radioactive Sources

Another recent instrument for which a *de facto* review meeting mechanism has been established notwithstanding the absence of a specific provision is the Code of Conduct on the Safety and Security of Radioactive Sources[30] and its associated Guidance on the Import and Export of Radioactive Sources.[31] Although the code and guidance are not legally binding, they represent an important codification of basic principles that states should apply to ensure the safe and secure management of radioactive sources, some of which can pose significant risks if improperly handled or diverted from authorised uses. In 2006, an open-ended meeting was convened under the auspices of the IAEA to consider whether and how to structure a process for information exchange that could help states better apply the code and guidance.[32] The participants decided to establish triennial "Open-Ended Meetings of Technical and Legal Experts for Sharing of Information as to States' Implementation of the Code of Conduct on the Safety and Security of Radioactive Sources and its supplementary Guidance on the Import and Export of Radioactive Sources". The first of these meetings was held in June 2007. The review process is substantially less formal than that adopted under the CNS or Joint Convention, with national reports being optional and the written question and response procedure omitted.

Amendment conferences

The final clauses of virtually all international legal instruments contain a provision on how a particular instrument may be amended. For multilateral instruments the amendment article typically provides that a conference or meeting of the parties to consider a proposed amendment may be convened at the request of a party and with the agreement of a certain proportion of states parties.[33] The scope of an amendment conference can be narrow, if focused only on one or a few provisions. However, the scope can become quite broad (essentially resembling a review conference), if a series of wide-ranging amendments have been proposed. Similarly, an amendment conference process can become the equivalent of a review conference if its preparatory work is essentially "open-ended", namely, to consider any and all changes to a treaty regime that may be proposed by experts or governments.[34]

Conferences and annual meetings of multilateral organisations

It should be noted that the periodic (usually annual) meetings of international organisations possess some of the attributes of review conferences. In the nuclear field, meetings of the IAEA General Conference and Board of Governors and of the OECD Council and NEA Steering Committee essentially include an on-going process of reviewing the implementation of their underlying legal instruments.[35] Other multilateral organisations are engaged in the same kind of on-going review

30. IAEA document IAEA/CODEOC/2004.

31. IAEA document IAEA/CODEOC/IMP-EXP/2005.

32. A useful discussion of this development may be found in McIntosh, "Implementation of the Code of Conduct on the Safety and Security of Radioactive Sources: the June 2007 Information Exchange Meeting", *Nuclear Inter Jura 2007 Proceedings*, at pages 589-594, International Nuclear Law Association (2007).

33. See, for example: NPT Article VIII; CNS Article 32; Joint Convention Article 41; CPPNM Article 20.

34. For example, the expert working group meetings leading up to the 2005 Diplomatic Conference to amend the CPPNM basically reviewed all aspects of the convention. See discussion in Rautenbach, Tonhauser and Wetherall, "Overview of the International Legal Framework Governing the Safe and Peaceful Uses of Nuclear Energy: Some Practical Steps", *op. cit.*, at footnote 10, page16-17.

35. Statute of the International Atomic Energy Agency (approved on 23 October 1956 and entered into force on 29 July 1957); Convention on the Organisation for Economic Co-operation and Development

process as will be discussed later. Also, the IAEA regularly sponsors major international meetings and conferences addressing subjects within its jurisdiction, many of which include presentations reviewing relevant international instruments.[36]

2. Non-nuclear instruments

Over the past several decades, a large number of multilateral instruments have been developed to address a wide range of issues of interest to the international community. Many or almost all of these instruments contain provisions for periodic conferences or meetings of the parties to assess implementation. The following selected listing is offered only to provide a representative sample of major instruments utilising the review conference mechanism. Particular emphasis is placed on those which convey lessons about how such meetings can be more efficiently and effectively conducted to meet their objectives.

Antarctic Treaty

The earliest post-World War II arms limitation instrument dedicated the region of Antarctica to peaceful uses only. The treaty, which was signed in 1959 and entered into force in 1961, now comprises 47 members. Since 2004, a Secretariat in Buenos Aires has co-ordinated activities under the treaty. In addition to a range of intersessional work and subsidiary bodies, the consulting parties have met some 32 times pursuant to Article IX(1) of the treaty. The latest meeting occurred in April 2009 in Baltimore, Maryland, U.S.A.[37]

Seabed Treaty

Another international instrument designed to prevent the introduction of nuclear weapons into an area previously free from them is the Treaty on the Prohibition of the Emplacement of Nuclear Weapons and other Weapons of Mass Destruction on the Seabed and the Ocean Floor and in the Subsoil Thereof (hereinafter Seabed Treaty). The treaty, which was signed in 1971 and entered into force in 1972, now comprises 97 parties. Three meetings of the parties have been conducted, pursuant to Article VII, in 1977, 1983 and 1989. However, in 1992 the parties decided that no further meetings were necessary to review implementation.[38]

Environmental Modification (Enmod) Convention

The Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques was opened for signature in 1977 and entered into force in 1978. It currently comprises 75 members. Review meetings pursuant to Article VIII(1) were conducted in 1984 and 1992.

(14 December 1960); Statute of the OECD Nuclear Energy Agency (adopted on 20 December 1957 with entry into force on 1 February 1958).

36. Information on IAEA meetings and conferences, both already held and those scheduled, can be found on the Agency's website at www-pub.iaea.org/MTCD/Meetings/Meetings.asp.

37. Detailed information on the Antarctic Treaty may be found at the Secretariat website at www.ats.aq.

38. Information on the Seabed Treaty may be found at the website of the Monterey Institute at cns.miis.edu/inventory/pdfs/seabed.pdf.

Convention on International Trade in Endangered Species

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (hereinafter CITES) was adopted in 1973 and entered into force in 1975. It currently comprises 175 members. Article XI of the convention provides for conferences of the parties every two or three years as decided by its states parties. A permanent secretariat co-ordinates such meetings and other intersessional activities. Fourteen meetings have been conducted between 1976 and 2007.[39]

Convention on Anti-Personnel Mines

The Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on Their Destruction (hereinafter Mine Ban Treaty) was adopted in December 1997 and entered into force in 1998. It currently comprises 156 parties. Article 11 of the convention provides for annual meetings of the parties, nine of which have been conducted. The most recent meeting was in November 2008. Article 12 provides for review conferences, with one having been conducted in 2004 in Nairobi. An interesting feature of the Mine Ban Treaty is Article 7 on transparency measures that consists of a listing of information to be made available by parties.[40]

Environmental Impact Assessment Convention

The Convention on Environmental Impact Assessment in a Transboundary Context[41] (hereinafter EIA Convention), negotiated under the auspices of the United Nations Economic Commission for Europe (ECE), was adopted in 1991 and entered into force on 10 September 1997.[42] Forty-two European nations are currently parties to the convention. Five meetings of the parties to review implementation of the EIA Convention have been conducted[43] pursuant to Article 11. The article provides that meetings should occur in connection with annual sessions of senior advisers to ECE governments or "at such other times as may be deemed necessary by a meeting of the Parties, or at the written request of any Party". A noteworthy feature of EIA meetings is the well-developed process for public participation.[44]

Chemical Weapons Convention

The Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction (hereinafter CWC or Chemical Weapons Convention) entered into force on 29 April 2007 and now comprises 188 parties. The CWC established the Organisation for the

39. Information on the CITES process may be found at www.cites.org.

40. Information on the Mine Ban Treaty may be found at the website of the International Campaign to Ban Landmines at www.icbl.org/treaty.

41. Sometimes referred to as the Espoo Convention after Espoo, Finland where it was adopted.

42. Detailed information on the EIA may be found on the website of the ECE at www.unece.org/env/eia/meetings.

43. In Oslo 18-20 March 1998; in Sofia 26-27 February 2001; in Kiev 21 May 2003; in Cavtat, in Croatia 1-4 June 2004; and Bucharest 19-21 May 2008.

44. See Guidance on Public Participation in Transboundary EIA, document ECE/MP.EIA/7 (2006) at www.unece.org/unv/eia/about/publicpart.html.

Prohibition of Chemical Weapons (OPCW) headquartered in The Hague, Netherlands.[45] Article VIII of the convention establishes a conference of the states parties composed of all members of the organisation which meets in regular and special sessions. The CWC also makes provision for periodic review conferences, as follows:

> "The Conference shall not later than one year after the expiry of the fifth and the tenth year after the entry into force of this Convention, and at such other times within that time period as may be decided upon, convene in special sessions to undertake reviews of the operation of this Convention. Such reviews shall take into account any relevant scientific and technological developments. At intervals of five years thereafter, unless otherwise decided upon, further sessions of the Conference shall be convened with the same objective", Article VIII(22).

Two CWC review conferences have been held so far: the first from 28 April to 9 May 2003; the second from 7 to 18 April 2008.

Biological Weapons Convention

The Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction (hereinafter Biological Weapons Convention or BWC) entered into force in 1975 and is currently adhered to by 163 parties.[46] Six review conferences (the latest in 2006) have been conducted pursuant to Article XII of the convention, which states:

> "Five years after the entry into force of this Convention, or earlier if it is requested by a majority of Parties to the Convention by submitting a proposal to this effect to the Depositary Governments, a conference of states parties to the Convention shall be held at Geneva, Switzerland, to review the operation of the Convention, including the provisions concerning negotiations on chemical weapons, are being realised. Such review shall take into account any new scientific and technological developments relevant to the Convention".

Conventional Armed Forces in Europe Treaty

The Treaty on Conventional Armed Forces in Europe (hereinafter CFE) was opened for signature in 1990 and entered into force in 1992. The review conference provision in the treaty states:

> "Forty-six months after entry into force of this Treaty, and at 5-year intervals thereafter, the Depositary shall convene a conference of the Parties to conduct a review of the operation of this Treaty".[47]
>
> Three CFE review conferences have been conducted in 1996, 2001 and 2006.[48]

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45. Detailed information on the CWC and OPCW may be found on the organisation's website at www.opcw.org. See also Batsanov, "Approaching the 10th Anniversary of the Chemical Weapons Convention", *The Nonproliferation Review*, Volume 13, Number 2 (2006) at pages 339-353.

46. Information on the BWC and its implementation can be found on the website of the United Nations Office at Geneva at www/unog.ch. See also "Biological Weapons Convention Sees Limited Progress in 2008" in WMD Insights at www.wmdinsights.org/I30/I30_G2_BWC.htm (February 2009).

47. CFE Treaty Article XXI(1).

48. A discussion of the CFE and its review conferences may be found on the website of the Monterey Institute Center for Nonproliferation Studies at http://cns.miis.edu/pubs/inven/pdfs/cfe.pdf (2006).

Although it has not entered into force, the Comprehensive Nuclear-Test-Ban Treaty[49] contains a provision mandating review conferences every ten years.[50]

B. Basic issues and options pertaining to the review conference mechanism

Having identified the key instruments utilising the review conference mechanism in Part A, the discussion in this part turns to three inter-related aspects of the subject: objectives, issues and options for improvement.

At the outset, it is important to consider the various roles and objectives of review conferences. These can differ somewhat among the various instruments and, of course, different parties will consider some of these roles more important than others. In this regard, review meetings seem to fall within two basic categories. First, there are those (like the NPT revcons) that are aimed at "verifying" compliance with the instrument's obligations. For reasons of brevity, I will call these "verification" conferences or meetings. Secondly, there are meetings (e.g. those linked to the CNS, Joint Convention, codes of conduct) that are intended mainly to share information and provide an incentive for better implementation, so called "incentive" meetings. With regard to the first category, the primary impetus and models seem to originate in the arms control or disarmament arena. For the second category, the objectives and models are based, to a large extent, on experience with various environmental instruments. Regardless of which category into which an instrument falls, one measure to assess the success of any associated review meeting is the extent to which it meets the broadest range of objectives.

The following analysis focuses on several topics that seem relevant for assessing the strengths and weaknesses of the review conference mechanism and identifying means for improvement. Some of these topics are primarily procedural, others organisational and still others more conceptual. They are all closely related and can be mutually reinforcing or even contradictory. It is important to recognise both the synergies and tensions among them, given that balancing of different interests can be a major factor in conducting a successful review process.

1. Reviewing implementation or operation

Most instruments that incorporate a review conference mechanism state that a fundamental rationale for this approach is to provide a means of assessing the implementation or operation of the instrument in meeting the objectives of its states parties. This over-arching concept underlies all the other topics to be discussed. Participants in review conferences must appreciate that the basic purpose of such meetings is to provide a regular and, indeed mandatory, opportunity for states parties to reach a collective judgment about whether the relevant instrument's obligations are being met and rights conveyed by it are being protected. This is central to "verification" meetings, less so to "incentive" meetings. A basic lesson for all review conferences is that the leadership and majority of states parties must be diligent in maintaining the focus of the review on the key objectives and provisions of the instrument. Allowing extraneous or irrelevant matters to be intruded into the proceedings not only

49. Opened for signature 24 September 1996, the CTBT requires 44 named states to adhere for entry into force.

50. See CTBT Article VIII. The text and other information concerning the treaty may be found on the website of the Comprehensive Nuclear-Test-Ban Treaty Organization at www.ctbto.org.

wastes time and attention of participants but can limit opportunities for a meaningful review. The president or chair of a meeting always plays a key role in maintaining a meeting's focus and well-drafted rules of procedure which enable a majority of parties to limit non-germane interventions can also be important.[51]

2. Interpretation of rights and obligations

The first step in implementing any international instrument is to clearly understand the terms used in defining the rights and obligations of parties under that instrument. Each party to a treaty or agreement has the initial right to interpret the terms of the instrument to determine how it will meet its obligations in good faith. This process can pose difficulties, however, particularly when an instrument contains very general or complex terms that are not easily translated into a national language. For example, the commitment of non-nuclear-weapon states parties not to receive "any assistance in the manufacture of nuclear weapons or other nuclear explosive devices" (Article II of the NPT) has been the subject of debate in many review conferences, especially as concerns exports of so-called "dual use" equipment or technology that could assist both military and peaceful uses. Review conferences provide an opportunity to reach a collective judgment about how terms in an instrument should be interpreted. Consistent with the Vienna Convention on the Law of Treaties, this judgment could be embodied in the final document or other reports of the review conference[52] or even be recognised in applying the instrument.[53]

An example of how a review conference can clarify interpretation is the treatment of Article V of the NPT providing that the "benefits from any peaceful applications of nuclear explosions" should be made available to parties. NPT revcon documentation has basically reached a consensual interpretation that peaceful explosions are inconsistent with the treaty's purposes.[54] Where parties to an instrument are advancing different interpretations, one option may be for the leadership of the conference to convene a group of experienced advisors to assess the merits of differing views. Such an advisory body should reflect the range of perspectives within the conference, and – if possible – include legal and technical experts not accredited to any delegation. The advisory group's assessment would be considered in the plenary or relevant sub-groups of a review conference with the final decision being taken by the conference under its rules.

3. Public information and transparency

A very important yet often unrecognised function of review conferences is to educate a broad range of "stakeholders" about issues arising from an international legal instrument. Indeed, a major purpose of negotiating certain instruments is to persuade interested parties that the international community is taking effective measures to address perceived problems. For example, the Convention on Nuclear Safety was developed at least in part to demonstrate that, in the wake of the Chernobyl accident, the safety of nuclear power plants was receiving necessary attention worldwide. The same could be said for most of the other instruments listed previously. Stakeholders can comprise a large range of

51. See, for example, Part III of the CNS Rules of Procedure and Financial Rules, *op. cit.*, at footnote 16, especially Rule 22 on speeches and debate at plenary sessions, Rule 26 on suspension or adjournment of sessions and Rule 28 on closure of debate.

52. See Vienna Convention Article 31(3)(a) on subsequent agreement of the parties on interpretation.

53. See Vienna Convention Article 31(3)(b) on subsequent practice of the parties on application.

54. See Stoiber, "The Evolution of NPT Review Conference Final Documents, 1975-2000", *op. cit.*, at footnote 9, at pages 140 and 159.

individuals and organisations, including the states parties,[55] non-party states, NGOs, the media, academic bodies and the public. The convening of a major international meeting provides an opportunity to focus the attention of persons and entities that are interested (or should be interested) in an instrument and its underlying objectives.

The issue of *transparency* at review conferences raises additional issues. Although somewhat vague, the term "transparency" can be taken to mean those measures adopted to provide sufficient information on the substantive and/or procedural aspects of a subject or process to allow various participants or stakeholders to have a better understanding of what is involved. With regard to implementing international instruments, governments are traditionally suspicious of calls for greater transparency. This may originate in fears of loss of control or disruption of the process, embarrassment over mistakes, or evidence of incompetence or misconduct in their own implementation of an instrument. The provision of detailed information on some matters (such as security measures at nuclear power installations) can pose risks to national or international security or disclose legitimately protected commercial matters or jeopardize other important interests. It is necessary at all times to achieve a balance between providing information necessary for appreciation and participation in decision making, while adequately protecting information that should be treated as confidential. One approach is to conduct some sessions in public[56] and restrict participation in others. Another possible model for enhanced information is contained in Article 7 of the Mine Ban Treaty discussed earlier.[57]

In the final analysis, an effective public information effort requires a well-organised conference secretariat with the mandate to provide up-to-date and accurate information throughout the revcon process including preparatory and intersession work.

4. Scheduling and frequency of review conferences

As a matter of general international law, the authoritative Vienna Convention on the Law of Treaties is silent on the subject of review conferences. That being the case, the parties to a treaty or convention are free to seek a meeting to review interpretation or application of the instrument and to adopt whatever organisational and procedural measures they see fit. Therefore, if the parties wish to utilise the revcon mechanism, specific provisions on key procedural aspects should be codified in the relevant instrument. In particular, an important set of threshold issues need to be addressed, including whether revcons are to be mandatory or optional, whether a definite schedule for revcons should be adopted, and in cases where revcons are optional or not subject to a definite schedule, how the parties are to arrange for convening a revcon.

As the listing of instruments in Part A demonstrates, the past few decades have witnessed a "proliferation" of review meetings on a wide variety of subjects. For many states, preparing for and participating in these meetings can be a resource burden. Options for addressing the issue of resources are discussed below in Sub-part B.10 on resources.

In addition, a change of circumstances since the adoption of an instrument may have reduced the need for frequent, mandatory reviews. The case of the Seabed Treaty, where review meetings have

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55. Some care is necessary in using collective nouns like "states parties" or "interest groups". Obviously, such entities are comprised of many individuals, some of whom are very active and knowledgeable about a subject and some that have little or no acquaintance with it.

56. Typically the plenary meetings of all parties.

57. See the Mine Ban Treaty website, *op. cit.*, at footnote 40, *supra*.

been suspended, is a good example[58] and suggests the desirability of adopting review conference provisions that provide flexibility in scheduling to avoid unnecessary efforts.

Finally, a number of instruments that mandate review conferences also establish continuing organisations to co-ordinate implementation. These organisations typically hold annual meetings of their general membership which have many of the characteristics of review conferences. For such regimes, consideration might be given to converting annual membership meetings into a review conference to avoid duplication of effort.

5. Preparatory and intersessional work

Large multilateral meetings obviously require substantial preparatory measures, raising the issue whether intersessional work should focus solely on procedural and organisational matters or whether substantive issues should also be considered. This issue does not arise *vis-à-vis* instruments linked to an organisation, since the secretariats and policy organs of these bodies are engaged in continuing activities addressing both procedural and substantive matters. However, for instruments not linked to an organisation (most notably the NPT), the scope of preparatory and intersessional work has been a matter of contention. One means of addressing the issue is for the parties to agree (ideally at a main meeting) that preparatory or intersessional meetings conducted before the next main meeting will be dedicated to distinct subjects. For example, a session on procedural rules would not address issues of compliance with substantive obligations and vice versa.

Another issue relating to intersessional work involves resources. As discussed elsewhere, participation in numerous multilateral meetings can be a burden to many states, especially smaller and less developed ones. Consideration should be given to ways to adjust preparatory work to save costs and time. Regional meetings may be easier to attend and the management of documentation by electronic means might increase efficiency.

6. Official participation

Review of complex multilateral instruments, particularly those concerning technical subjects (such as nuclear energy), involves a range of expertise and effective participation, and contribution to a successful meeting may be more difficult for delegations comprising only diplomatic generalists. Where review conferences are divided into working groups or subsidiary bodies addressing specific subjects, it is important that delegates assigned to those bodies possess experience and knowledge of the specific subject.[59] For some states, delegations may need to include non-governmental experts (e.g. from academia, industry or other groups). In order to enable less developed states parties to have access to necessary expertise, regional or sub-regional groupings could arrange for advisors to assist all delegations in the group.

A particular question regarding participation in review conferences involves how states that are not party to an instrument should be treated. The answer may be different for signatory states that have not completed national procedures required for adherence and those that have not signed (or may have even expressed an intention not to become a party). For the former, an obvious option is to allow a signatory state to participate as an observer, without vote. For the latter, the issue is similar to that involving non-governmental organisations discussed below. Where a non-party state has a clear

58. See information on the Seabed Treaty website, *op. cit.*, at footnote 38, *supra*.

59. For example, the CNS Guidelines regarding the review process provide that delegations to country groups should be led by the nuclear regulatory body.

interest and involvement in a subject, it may be useful for a review meeting to provide some means for that state to provide information and views on issues within the framework of the meeting. Indeed, allowing participation by non-parties may be one means of encouraging broader adherence to an instrument.

7. Participation by non-governmental bodies and the public

The need to provide measures for public participation in decision making about the peaceful uses of nuclear energy has been increasingly recognised in the domestic laws of most states utilising the technology.[60] However, only limited opportunities for participation by non-official individuals or groups have been afforded in multilateral review conferences. As discussed previously, some review conferences have encouraged the inclusion of representatives of an affected industry on national delegations.[61] However, for the most part, states parties have been reluctant to provide a more defined role for other non-official organisations for several reasons.

First, review meetings have a governmental character under the terms of the relevant legal instrument and general public international law. As a result, actions taken at a review meeting can have significant legal implications for states parties. For this reason, defining an appropriate role for non-official individuals or groups that does not threaten loss of control over the process by states parties has been seen as difficult. Also, many review meetings are of limited frequency and duration, involving a large number of states parties. Official participants are thereby understandably reluctant to encumber limited schedules with presentations by persons or organisations without official standing that may curtail or displace participation by accredited delegations.

Notwithstanding these legitimate concerns, exclusion of interested non-official groups can have negative effects on the success or the perceived success of review conferences. First, it is clear that governments do not possess a monopoly of technical, legal or policy expertise. Contributions by non-official bodies can enrich the review process, thereby helping to achieve its objectives. Second, a perception that a meeting addressing issues of major public concern is being conducted in secret, without meaningful access or input by relevant non-governmental bodies, can lead to an impression that the review has not been thorough or objective.

The subject matter and structure of a particular review conference will largely determine the extent to which broader participation for non-governmental organisations can be structured. One model that could provide elements for an enhanced role for NGOs or other non-official bodies at nuclear review conferences has been developed for the Environmental Impact Assessment Convention.[62] Key elements in the EIA Guidelines include: timely and adequate information to the public, opportunity for comments and opinions by the public, a reasonable time-frame for public participation and taking account of the results of public participation in decision making. These basic elements can be structured in a flexible manner to expand public participation without unduly affecting the role of official delegations.

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60. See, for example, Pelzer and Bischof, "Vergleichender Überblick über die Öffentlichkeitsbeteiligung im atomrechtlichen Genehmigungverfahren anderer europäischer Staaten", *Fünftes Deutsches Atomrechtssymposium* (1976) at pages 299-320 and Galliot de Galzain, "Right of the Public to Participate in the Nuclear Decision-Making Process", *Nuclear Law Bulletin* No. 50, at pages 44-52.

61. See CNS Guidelines regarding the Review Process, *op. cit.*, at footnote 14, paragraph 14.

62. See Guidance for Public Participation in EIA, *op. cit.*, at footnote 44.

It is noteworthy that the Third Preparatory Committee Meeting for the 2010 NPT revcon agreed to recommend to the conference a broader level of participation for non-governmental organisations.[63]

8. National reporting and documentation

Most multilateral legal instruments rely on action by states parties as the primary means of implementation which is why the availability of information on steps taken by the parties to meet their commitments is essential to a meaningful review conference. Primary issues in this regard involve the timeliness, accuracy and completeness of national reports. A useful measure in this regard is the issuance of guidelines on reporting.[64] As discussed previously,[65] electronic information and communication systems have become essential to enabling efficient and accessible management of the voluminous documentation associated with most multilateral review conferences.

One aspect of national reporting that needs careful consideration is the extent to which requirements for lengthy and detailed reports may become a disincentive for states (particularly those with limited resources) to adhere to an instrument.[66] Certainly reports should be informative and as complete as possible. However, this is another area where the "best" can become the enemy of the "good".[67]

9. Sub-groups, working groups and subsidiary bodies

Because most multilateral instruments address a range of subjects, it is not surprising that most review conferences have found it desirable to divide much of the process among sub-groups. For logistical reasons alone, it has become apparent that the basic review function cannot be conducted in large plenary meetings of all states parties. Sub-groups can be structured along several lines: subject matter, geographical, regional or on some other basis. For example, the NPT review conferences have typically created three main committees to address the fundamental aspects of the treaty, namely disarmament, non-proliferation and peaceful uses. More recently, the NPT revcon has created a series of so called subsidiary bodies to examine specific issues within the ambit of the main committees. As has been stated elsewhere, "[a]lthough creating a means to focus discussion may have appeared a positive innovation at the time, in practice it has proved to be divisive and the source of much dispute and friction".[68]

A different approach has been used at CNS review meetings, where geographically diverse sub-groups are established to review all provisions in the convention.[69] The composition of such sub-groups can pose difficulties. The "tennis seeding" method used for CNS meetings is one attempt to distribute states with diverse nuclear programmes into sub-groups that are broadly representative. This

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63. See draft final report of the Preparatory Committee, *op.cit.*, at footnote 8, paragraph 26.

64. See, for example, the CNS Guidelines on National Reports, *op. cit.*, at footnote 15.

65. See Part B.3 on public information and transparency.

66. This concern has been expressed in connection with the slow process of adherence to the Joint Convention. See McIntosh, *op. cit.*, at footnote 32 at page 591.

67. I owe this valuable aphorism to former IAEA Director General Hans Blix, who used it often.

68. See Simpson and Nielsen, *op. cit.*, at footnote 9 at page 291.

69. This approach is to some extent at odds with the CNS text which states in Article 20(2) that "sub-groups comprised of representatives of Contracting Parties may be established and function during the review meetings as deemed necessary *for the purpose of reviewing specific subjects* contained in the reports" (emphasis supplied).

is intended to avoid sub-groups reaching fundamentally different conclusions – for example about a particular technology used in a specific region. Although this approach seems to have succeeded reasonably well for the CNS, it would not be appropriate for all instruments. In some cases, differences in the nuclear programmes or regulatory structures of states would make it more productive to organise sub-groups on the basis of similar technologies, levels of development or even geography.

As with preparatory and intersessional activities discussed previously,[70] it is important that sub-groups have clear agendas that avoid gaps and duplication or that encourage unproductive discussion of non-germane issues. Another consideration in creating sub-groups is how they may impact participation by smaller delegations. Having a large number of sub-groups may prevent smaller delegations from attending sessions of interest. One option is to create a limited number of sub-groups on related topics, with a defined schedule for sequential consideration of various topics. Another option would be to create a larger number of groups under a specific subject matter, but co-ordinate their meetings at differing times to permit maximum attendance by smaller delegations.

10. Resources

The costs of convening review meetings can be significant. For those instruments linked to an organisation, the costs of hosting the meeting[71] are typically subsumed in the annual budgets of the organisation. For others, costs may be divided among the states parties and hosting organisations (often a United Nations body). The costs of participating in a meeting are typically borne by the states parties, but there are exceptions; for example, the United Nations pays for participation in certain meetings by less-developed countries, but such assistance is not uniform for all review meetings. For many small developing states the costs of participation can be prohibitive. Many review conferences require the preparation of national reports and the review of national reports of other states parties,[72] a process that may require substantial effort by national officials or other experts. Options for reducing revcon costs (such as limiting frequency and duration of meetings, using electronic communications etc.) can help address the resource problem, and states having significant resources should consider providing financial or other assistance to developing states. Often this can be done through the organisations created by an instrument or, in the nuclear field, the IAEA.

11. Decision making

A significant issue that has adversely affected the work of some review conferences is how to efficiently reach decisions on both substantive and procedural issues. Given the recognised international law principle of the "sovereign equality" of states, decision making in most multilateral treaty regimes has been conducted by *consensus*. No agreed definition of the term has been established in any of the major regimes discussed in this paper. Although it is sometimes stated that "consensus does not require unanimity", in practice a single state that disagrees with a proposed decision may be able to effectively prevent, delay or compromise that decision through withholding its agreement. Another result of seeking an absolute consensus is that decisions or documents can be diluted to reflect the "lowest common denominator". Although this approach may ensure that an instrument is interpreted and applied in a consistent manner, it can also produce a decision or

70. See discussion at B.5 on preparatory and intersessional work.

71. Hosting a meeting can include a wide range of costs both at a main meeting and at preparatory or intersessional meetings (e.g. for secretariat staff, meeting venues, interpretation and translation, publications and documentation, security, audio-visual services and many others).

72. See, for example, CNS Article 5 and Joint Convention Article 32.

document so vague as to become practically meaningless as an assessment of major issues or a guide for further action.

Only a limited number of approaches for escaping the "consensus trap" have achieved any success. One approach requires forceful leadership by the president or chair where it becomes evident that consensus (or unanimity) on a decision cannot be achieved without undue delay. The president or chair could offer a solution based on his or her understanding of the consensus of a substantial majority of parties. Depending on procedural rules, the chair's decision can then be approved by a majority vote (or other quotient such as two-thirds).[73] Such an approach is reflected in the CWC Treaty as follows:

> "The Conference shall take decisions on questions of procedure by a simple majority of the members present and voting. Decisions on matters of substance should be taken as far as possible by consensus. If consensus is not attainable when an issue comes up for decision, the Chairman shall defer any vote for 24 hours and during this period of deferment shall make every effort to facilitate achievement of consensus, and shall report to the Conference before the end of this period. If consensus is not possible at the end of 24 hours, the Conference shall take the decision by a two-thirds majority of members present and voting unless specified otherwise in this Convention. When the issue arises as to whether the question is one of substance or not, that question shall be treated as a matter of substance unless otherwise decided by the Conference by the majority required for decisions on matters of substance".[74]

These approaches offer only a partial solution. There is no simple procedural solution to decision making, particularly where major legal and policy issues are at stake.

12. Role of review conference leadership

The significance of conference leadership in achieving successful results at a multilateral meeting cannot be over-emphasised. However, options for improving leadership at such meetings are extremely limited. One reason for this lies with the common practice of selecting the leaders of a meeting through an informal "geo-political rotation" approach, which has sometimes led to selection of a president or chair that is less capable or qualified than other potential candidates. There is no easy solution to this issue, except to ensure that less qualified leaders have access to adequate advice and support.

The following are only some of the more important attributes of successful conference leadership that are frequently mentioned as important.

Subject matter expertise

For instruments addressing subjects having particular technical or scientific aspects, there is no substitute for leadership that has demonstrated experience, skill and knowledge in the field. The president/chair must be able to recognise issues arising from the subject matter and understand proposals for dealing with them. However, necessary expertise can be made available to a conference president or chair through the assignment of expert advisors; a feature of some meetings is a listing by

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73. See Rule 35 on Adoption of Decisions in the CNS Rules of Procedure cited in footnote 16 above. Rule 35 of the Rules of Procedure for the Joint Convention cited in footnote 20 above is substantially similar.

74. CWC Article VIII(18).

the conference secretariat of legal, technical or scientific advisors who could be assigned to work with a president or chair of the conference or subsidiary bodies.

Experience at meetings

The president/chair of a review conference should have demonstrated competence at running meetings involving complex issues and diverse perspectives. He or she must understand basic parliamentary procedure, including what options are available under established rules for moving a large meeting toward consensus.

Objectivity

A successful president/chair cannot be perceived as partial to particular elements or interests at a meeting or subject to undue influence from any quarter.

Authority

Although difficult to define precisely, a successful president/chair of a review meeting must have the self confidence and tolerance to manage debates that can often be contentious – even acrimonious. This requires both patience and decisiveness: patience to listen attentively and even sympathetically to extended debate, decisiveness to indicate when discussion should end and a result achieved.

13. Role of secretariats and international organisations

Review meetings are typically convened by the depositary (or depositaries) of an instrument. In the nuclear field this is often the IAEA, even for instruments where only a portion of the agency's members are party to that instrument. Experience suggests that a permanent secretariat can be an important factor in conducting successful meetings. The lack of such a permanent secretariat for the NPT revcons has led to inefficiency and poor organisation, both of the main conference and preparatory work.

For international organisations not linked to a specific instrument (such as the UNO or IAEA), assuming the secretariat role for a review conference can raise both policy and resource issues; the membership of an organisation may not be identical to the membership of a specific treaty or convention and questions may arise as to whether support of a review conference is consistent with the organisation's own constitutional instruments and policies. Resources expended to service a revcon are not available for other purposes. A decision to support a review conference must be made by the organisation's policy organs based on a judgment that this would contribute to the organisation's mandate and objectives.

14. Achieving broader adherence

Since the effective implementation of multilateral legal instruments depends on the actions of national governments, it is important that states that can contribute to or frustrate the attainment of the objectives of an instrument be brought within the scope of its rights and obligations. While "universality" need not be an objective of all multilateral regimes, the broadest adherence necessary for effective implementation should be sought. Review conferences provide an opportunity to encourage broader adherence by focusing on a definite event that can involve a state in the implementation of a treaty regime. Diplomatic demarches to adhere to an instrument are most effective when connected to such specific events on the global policy calendar. Another means of encouraging broader adherence would be for nuclear supplier states and relevant international organisations to

condition nuclear-related trade, co-operation or assistance on adherence to relevant international instruments and active participation in review meetings.

15. Final documents, conclusions and recommendations

If an instrument is found ineffective in meeting certain objectives, a review conference can identify measures for remedial action. Such remedial action can take many forms, including clarifying interpretation of treaty language, amending the instrument, creating new institutional arrangements for pursuing treaty goals, recommending actions by states parties, regional or multilateral organisations or private stakeholders, recommending incentives or sanctions to encourage or force improved compliance or even negotiating new instruments to replace or supplement an existing treaty or convention.

The ability of a review conference to produce a final document reflecting a consensus view by the parties on implementation of an instrument has often been considered the most important (sometimes even sole) criterion for judging whether the meeting has been successful. It is important that conclusions and recommendations be clearly and precisely recorded. In cases where a substantial consensus of views cannot be achieved on an issue, it may be better to record differing views, reservations or objections in a separate section of a final document or report than to provide no documentation on the issue.

Where additional measures are felt necessary for effective implementation of an instrument, consideration should be given to adopting a concrete work plan containing organisational and procedural arrangements, including a schedule for action.

16. Verification and enforcement of compliance

The review conference mechanism reflects a fundamental distinction between international and domestic law systems, namely that international law regimes typically lack clear measures for verifying and enforcing compliance with legal requirements by sovereign states for acts taking place under their jurisdiction and control. Some instruments provide for the loss of voting rights or suspension of other privileges in an organisation as a sanction for violations,[75] but this is not the case for many instruments and such sanctions lack the kind of impact that would seem appropriate for major violations. Review conferences have become a substitute for compliance regimes having clear procedures for determining when breaches of legal obligations have occurred and imposing meaningful sanctions for violations.[76] For most instruments, this "soft enforcement" role has been generally viewed as ineffective.[77]

With some exceptions, verification measures are absent from most nuclear instruments.[78] Indeed, the generality of some of the requirements in nuclear instruments would make it difficult to

75. See IAEA Statute, Article XIX(B).

76. For nuclear instruments like the CNS and Joint Convention that have an "incentive" character, it may be irrelevant to speak of verification and enforcement.

77. See, for example, Squassoni, "NPT Compliance: Issues and Views", Congressional Research Service Report for Congress (26 April 2005), at www.au.af.mil/au/awc/awcgate/crs/rs22125.pdf.

78. The most notable exception is the IAEA's safeguards system that verifies the commitment of non-nuclear-weapons states under NPT Article III.

develop meaningful "metrics" for measuring compliance.[79] Further, what body would conduct verification activities? In some areas the IAEA has successfully conducted voluntary assessment missions that provide guidance on whether measures implemented in member states are consistent with its safety standards. However, converting such missions into mandatory verification inspections would be costly and likely to raise potential conflicts with the responsibilities of national regulatory bodies.

In addition, what actions could be taken in response to a determination that a state party is not abiding by its legal obligations? No nuclear law instrument provides for specific sanctions or other penalties for non-compliance. Indeed, sanction measures have been deliberately omitted from "incentive" instruments as inappropriate in the context of their review processes. The only mechanisms available are references to the UN Security Council for action under Chapter VII of the Charter regarding threats to or breaches of the peace or to the IAEA for violations of safeguards obligations. An option for enforcing compliance that does not appear practical is termination or suspension of the operation of an instrument as a consequence of its material breach. The Vienna Convention on the Law of Treaties sets forth the procedures applicable to multilateral instruments. First, it may be difficult to establish that a breach is "material".[80] The option of termination normally requires unanimity of the other parties.[81] This is basically impossible for an instrument with a very large number of parties, such as the NPT or CPPNM. Exceptions for cases where a party demonstrates it is specially affected by a breach or that the breach radically changes the position of every party with respect to further performance[82] would also be difficult to establish. But more importantly, the basic goals of nuclear instruments (preventing the spread of nuclear weapons, ensuring safety of installations, protecting nuclear materials) argue against termination, a step that would merely free a state party accused of breaching its obligations of the need to comply with these important objectives.

Unfortunately, it is probably unrealistic to expect review meetings of most multilateral instruments to take concrete and effective measures to verify and enforce compliance. Disclosure of compliance failures at review conferences can be an incentive for improved compliance, but the character of these meetings is not well adapted to implement a rigorous compliance process.

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79. For example, what objective measures could be adopted under the Joint Convention to verify compliance with the Article 20(2) obligation that contracting parties "ensure the effective independence of the regulatory functions from other functions"?

80. See Vienna Convention Article 60(3) defining material breach as a repudiation of the treaty or violation of a provision essential to the accomplishment of the object or purpose of the treaty.

81. See Vienna Convention Article 60.2(a).

82. See Vienna Convention Article 60.2(b).

Conclusions

Review conferences can provide one useful mechanism for assessing the effectiveness of multilateral instruments in the nuclear field. However, they can also waste effort and resources, unless well managed. Part B of this paper focuses on sixteen topics which may present opportunities for enhancing the review meeting mechanism. Not all of these topics are relevant for all instruments. However, it is hoped that they provide a framework for additional consideration and development of a mechanism that has become a permanent feature of the international nuclear landscape.[83]

83. The states parties to the International Convention on the Suppression of Nuclear Terrorism, for which a *de jure* or *de facto* review meeting process has not yet been established, should consider whether review meetings could assist implementation.

National Implementation and Enforcement of Nuclear-Weapon-Free Zone Treaties

*by Lisa Tabassi**

The act of establishing a nuclear-weapon-free zone (NWFZ) by a state is a sovereign right protected by Article 1 of the Charter of the United Nations and Article VII of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). It is a step towards nuclear disarmament by restricting the areas on earth and in space where such weapons may be freely produced, moved, tested, stationed and used. It is a measure of national security for states that wish to distance their territory and their populations completely from the nuclear arms race, its implications and its effects on development, health and international relations. When the African Nuclear-Weapon-Free Zone Treaty (Treaty of Pelindaba) enters into force, probably this year, over half of the earth's land mass and 119 countries will be protected in such zones.

The 190 or 191[1] states parties to the NPT are in principle committed to achieving global nuclear disarmament. The establishment of a NWFZ is one of the only legally-binding steps that a non-nuclear-weapon state (NNWS) can take to protect its territory from the presence of nuclear weapons and to contribute positively and incrementally towards nuclear disarmament. Considering the balance of power in the fora where nuclear disarmament is discussed and decided, the establishment of a NWFZ is perhaps the strongest message and the only political pressure some states can bring to bear on the issue.

NWFZs go beyond the provisions of the NPT in that research on and stationing of nuclear weapons and the dumping of radioactive waste can also be prohibited and the physical protection of nuclear materials and safety of nuclear facilities can be required. Even when created unilaterally or multilaterally, without the official endorsement of the nuclear weapon states (NWS), the NWFZ

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* Lisa Tabassi is a Legal Officer in the Provisional Technical Secretariat of the Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) in Vienna, Austria. The views expressed herein are those of the author and do not necessarily reflect the views of the CTBTO Preparatory Commission. The author alone is responsible for the facts and opinions expressed in this article.

1. There is no formal recognition by NPT states parties of the announced withdrawal from the NPT by the Democratic People's Republic of Korea (DPRK) in 2003.

contributes to national security, trust, regional confidence-building and the non-proliferation of nuclear weapons.

The concept of NWFZs predates the NPT and was initially established only in uninhabited areas (Antarctica and outer space). Each successive NWFZ treaty has progressively developed the concept to respond to regional concerns as well as to a deepening awareness of possible threats and the need to exclude them. With the imminent entry into force of the Treaty of Pelindaba 99%, of the entire southern hemisphere of the earth (all but a few tiny territories and the high seas) will be, in binding legal terms, a nuclear-weapon-free zone encompassing the territories of 61% of all states. The concept is now creeping northwards as the five Central Asian States brought their NWFZ Treaty into force on 21 March 2009. They join Mongolia which declared itself as a single-state NWFZ in 1992 and has been recognised as such by the United Nations General Assembly. Mongolia has persistently worked over the past 18 years to entrench the zone internationally and nationally, through legislation and instruments ensuring that it is given the maximum respect.

The concept of the NWFZ was initially envisaged to address state activities since nuclear proliferation was not conceivable outside that realm. The NWFZ treaties did not create an obligation to adopt national implementing legislation because the state was bound by the treaty and would conduct itself accordingly. However, the situation as it stands today has evolved. The UN Security Council[2] and the highest echelons of government have recognised that proliferation of nuclear weapons by non-state actors is a pre-eminent threat to international security.[3] Regardless of whom the NWFZ treaties were originally targeting, any violation of their norms will be committed by individuals, acting either as state agents or non-state actors. If treaty norms have been incorporated into national law, the violator can be held accountable before the law using the national enforcement mechanisms. Only two states have adopted comprehensive NWFZ legislation *per se* in their national legal systems, namely Mongolia and New Zealand.

In light of the prospect that possibly one-third of all states globally are currently contemplating nuclear energy to meet their future energy needs, and will consequently become nuclear-capable in the coming decades,[4] new uranium exploration activities have commenced in dozens of countries.[5] Also, given the speculation that the world is on the brink of a renewed nuclear arms race which the NPT is not able to prevent, it is proposed that entrenchment of NWFZ treaty norms in national legislation has become essential.

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2. United Nations Security Council Resolution 1540 (2004).

3. Speech of the President of the United States Barack Obama delivered in Prague on 5 April 2009, available at www.ny.times.com/aponline/2009/04/05/washington/AP-Obama-Text-html?sq=nucl.

4. The IAEA has called for 1 400 new nuclear power reactors by 2050. See further, Daalder, Ivo and Lodal, Jan, "The Logic of Zero: Toward a World Without Nuclear Weapons", Foreign Affairs (November/December 2008) 80-95 at 88.

5. *Nuclear Energy Outlook*, Chapter 5, OECD/NEA, 2008; *Uranium 2007: Resources, Production and Demand*, OECD/NEA, 2008.

The purpose of this paper is to address that argument in the following structure:

- NWFZs in context.
- History of the creation of NWFZs.
- Definition, scope and progressive development of the NWFZ concept.
- National implementation and enforcement of NWFZ norms.
- Common elements for national implementing legislation.

1. Nuclear-weapon-free zones in context

1.1 Strengths

The creation of a NWFZ by a state or a group of states is consistent with the Charter of the United Nations. Article 1 of the Charter provides that states parties undertake "to take effective collective measures for the prevention and removal of threats to the peace … to develop friendly relations among nations … and to take other appropriate measures to strengthen universal peace". The silence of the Charter on the explicit question of nuclear weapons is understandable from the fact that it was drafted prior to their first use on Hiroshima and Nagasaki in 1945. In reaction to that first use, however, the United Nations General Assembly (UNGA) at its first session, in its very first resolution, requested proposals on "the elimination from national armaments of atomic weapons and of all other major weapons adaptable to mass destruction".[6]

By 1959, the UNGA had recognised "general and complete disarmament" as the most important challenge facing the world at that time. It decided that the goal of general and complete disarmament under effective international control would contribute to the achievement of the aims of (a) saving present and succeeding generations from the danger of war, (b) putting an end to the arms race, releasing resources for the benefit of mankind and (c) promoting the creation of relations of trust and peaceful co-operation between states.[7] That same year, the Antarctic Treaty was concluded and entered in force creating *inter alia* a denuclearised zone on the entire continent and its surroundings.

The Antarctic zone and the next NWFZ established nine years later for outer space, cover areas which are essentially uninhabited. The first NWFZ to be established in a densely populated area was the 1967 Treaty on the Prohibition of Nuclear Weapons in Latin America and the Caribbean (Treaty of Tlatelolco). The purpose of that zone is fundamentally different than that of the previous two and stems from the fact that it was driven by the desire of the people in the region to live in a nuclear-weapon-free-world rather than the desire of a number of governments to prevent the militarisation of a designated area. Tlatelolco has served as the model for the successive NWFZ treaties covering the South Pacific (1985 Treaty of Rarotonga), Southeast Asia (1995 Treaty of Bangkok), Africa (1996 Treaty of Pelindaba) and Central Asia (2006 Treaty of Semipalatinsk).

The negotiations of the 1967 Treaty of Tlatelolco and the 1968 NPT were carried on in parallel. Hence Article VII of the NPT provides that "[n]othing in this Treaty affects the right of any group of states to conclude regional treaties in order to assure the total absence of nuclear weapons in their respective territories". NWFZs are viewed as a complement to the NPT, going beyond its scope; they can, and do prohibit or restrict research on, and stationing of, nuclear weapons, the dumping of

6. UNGA Resolution 1 (I) (1946).

7. UNGA Resolution 1378 (XIV) (1959).

radioactive waste, and they can require the physical protection of nuclear materials and the safety of nuclear facilities.

After the Tlatelolco zone was created, the UNGA called for a comprehensive study on NWFZs by an ad hoc group of experts under the auspices of the Conference of the Committee on Disarmament in 1974.[8] The subsequent report,[9] together with the views of governments,[10] led to recognition by the UNGA that "the establishment of NWFZs can contribute to the security of members of such zones, to the prevention of the proliferation of nuclear weapons and to the goals of general and complete disarmament … [and that NWFZs] constitute one of the most effective means for preventing the proliferation, both horizontal and vertical, of nuclear weapons and for contributing to the elimination of the danger of a nuclear holocaust".[11]

NWFZs contribute, as a transitional measure, towards the achievement of nuclear disarmament and, finally, to general and complete disarmament which is the ultimate goal of the NPT. Article VI of the NPT provides that "[e]ach of the Parties to this Treaty undertakes to pursue negotiations in good faith on effective measures relating to the cessation of the arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control".

Although the statements made by the NWS in the preparatory meetings for the NPT Review Conferences assert the progress made towards the elimination of nuclear stockpiles, in the 40 years following the conclusion of the NPT, the prospect was looking bleaker than ever[12] until very recently.[13] A certain level of admonishment in this respect was extended by the International Court of Justice in its 1996 Advisory Opinion on the legality of the use or threat of use of nuclear weapons. In the *dispositif* of the opinion, the court held that, "[t]here exists an obligation to pursue in good faith and bring to a conclusion negotiations leading to nuclear disarmament in all its aspects under strict and effective international control".[14] In reaching that conclusion, the court considered that "[t]he legal import of Article VI goes beyond a mere obligation of conduct; the obligation involved here is an obligation to achieve a precise result – nuclear disarmament in all its aspects – by adopting a particular

8. UNGA Resolution 3261 (XXIX) (1974), Section F.

9. Conference of the Committee on Disarmament, *Comprehensive Study of the Question of Nuclear Weapon-Free Zones in all its Aspects,* CCD/467 (1975) and UN Document A/10027/Add.1 (1976).

10. Report of the Secretary-General, UN document A/31/189 and Add.1 and Add.2 (1976).

11. UNGA Resolution 3472 (XXX) (1975), Sections A and B.

12. See further Tabassi, Lisa and Leahey, Jacqueline, "The Treaty on the Non-Proliferation of Nuclear Weapons: Taking Stock after the May 2008 Preparatory Committee Meeting" in *American Society of International Law,* ASIL INSIGHTS (30 June 2008) www.asil.org/insights/2008/06/insights080630.html.

13. On 1 April 2009, the Presidents of the Russian Federation and the United States agreed to conclude a new treaty to further reduce their respective stockpiles of nuclear weapons (see further Global Security Newswire, *U.S.-Russian Nuclear Talks Reject Past Leader's Policies, Officials Say* http://gsn.nti.org/gsn/nw_20090402_2551.php). On 5 April 2009, the President of the United States Barack Obama announced his vision for a nuclear weapons-free world, reversing much of the earlier Bush doctrine www.nytimes.com/aponline/2009/04/05/washington/AP-ObamaText.html?scp=10&sq=nuclear+weapons&st=nyt. For the daily reports on the shift at the 2009 preparatory meeting for the 2010 Review Conference, see *NPT News in Review* at www.reachingcriticalwill.org.

14. International Court of Justice, Advisory Opinion on the Legality of the Use or Threat of Use of Nuclear Weapons (8 July 1996), www.icj-cij.int, paragraph 105(2)(F).

course of conduct, namely the pursuit of negotiations on the matter in good faith".[15] The establishment of NWFZs are a step leading to such a result.

The creation of a NWFZ may in fact be the most significant and effective political and legal tool a state can use to contribute towards nuclear disarmament and to prevent pressure from being brought upon it externally by a NWS to station nuclear weapons or parts of the support system on its territory. Mongolia has promoted this rationale and suggested that it could be of interest for the one-third of the UN membership that is not covered by a NWFZ,[16] particularly those which are politically or geographically blocked from joining a regional zone.[17] The Treaty of Tlatelolco's innovative entry-into-force clause, allowing each state to unilaterally bring the treaty into force in its own territory until the critical number was reached to bring it into force for the region, has proven to be a valuable tool in building consensus in a region and achieving full regional adherence to the treaty. This means of exercising sovereignty to protect territorial integrity should be viewed in the context of the UNGA 1970 Declaration on principles of international law concerning friendly relations and co-operation among states,[18] the 1995 UNGA Resolution on the protection and security of small states,[19] and Part II of the UN General Assembly Millennium Declaration.[20]

1.2 Weaknesses

On the surface, the concept of NWFZs would appear to be one that could easily be embraced by all NNWS and encouraged by NWS. However, certain political and military considerations make it difficult for the NWS to support the full concept, only a few of which are summarised below.

Consistent with the definition agreed by the UNGA in 1975, the full concept of NWFZs includes the protocol(s) by which the NWS commit themselves to binding assurances to NNWS that nuclear weapons will not be used in the zone or threatened against them. Such assurances build upon the ambiguous, conditional, unilateral negative security assurances provided by the NWS in connection with the NPT.[21] As long as deterrence is a central feature of NWS nuclear posture, the full concept of the NWFZ will not be achievable.

In its 1996 Advisory Opinion, the International Court of Justice referred to the still strong practice of nuclear deterrence as hampering the *lex ferenda* emergence of a customary rule on the unlawfulness of the threat or use of nuclear weapons. The court did observe that in order to be effective, deterrence necessitates that the intention to use nuclear weapons be credible. If such use was

15. ICJ Advisory Opinion, paragraph 99.

16. Permanent Mission of Mongolia to the United Nations, The Case for the Single-State Nuclear-Weapon-Free Zone, www.un.int/mongolia/ssnwfz.htm; Mongolia, Working Paper on Nuclear-Weapon-Free Zones (NPT/CONF.2010/PC-II/WP.1), www.reachingcriticalwill.org; Mongolia, Memorandum of the Government of Mongolia on Promoting the Country's International Security and Nuclear-Weapon-Free Status, UN document A/63/73-S/2008/297, dated 20 May 2008.

17. Enkhsaikhan, J., "Single-State NWFZs – a response to NWFZ blind spots", *The Mongolian Journal of International Affairs,* No. 14 (2007), pp. 32-36.

18. UNGA Resolution 2625 (XXV) (1970).

19. UNGA Resolution 49/31 (1995) on the protection and security of small states.

20. UNGA Resolution 55/2 (2000) on the United Nations Millennium Declaration.

21. China, France, Russian Federation, United Kingdom, United States, S/1995/261, S/1995/262, S/1995/263, S/1995/264, S/1995/265 (1995), noted with appreciation by the United Nations Security Council in its Resolution S/RES/984 (1995).

directed against territorial integrity, political independence or unnecessary or disproportionate measures of self-defence, the court considered that the threat or use would be unlawful.[22]

The policy of deterrence also creates the strategic need of the NWS for free movement of their nuclear-capable vessels and, as far as possible, overflight by their nuclear-capable aircraft. This need underlies resistance by the NWS to any erosion which the NWFZ concept may hold for the freedom of the high seas or the right of each zonal state to determine whether to allow "visits" by foreign vessels.

Adding to the complexity is the "neither confirm nor deny" policy maintained by the NWS concerning the location of their nuclear weapons and which vessels are carrying them. Consequently, although a zonal state may allow "visits" in its ports or transit through its waters by foreign vessels carrying nuclear weapons, it will never know, in fact, which vessels these may be.

Finally, in some cases the zone includes territory under the jurisdiction or control of an extrazonal state. In most cases this has been dealt with through an additional protocol to the treaty by which the extrazonal state is eligible to become party and agrees to include the territory in the NWFZ. In other cases, interpretative declarations made upon signature or ratification of the additional protocol have eroded the intent of the provisions; and in still others, the extra zonal state has refused to sign the protocol, significantly reducing the effectiveness of the NWFZ as a measure of national security.

2. History of NWFZs

A brief summary of the instruments and initiatives creating NWFZs is provided below. It outlines the political context that enabled or prevented the establishment of the zone, together with significant achievements and lessons learned from each experience.

2.1 NWFZ in Central Europe

The earliest initiative to establish a NWFZ in a populated area was proposed by the Union of Soviet Socialist Republics (USSR) in 1956. The proposal concerned a zone of limitation and inspection of armaments in Central Europe including a ban on the stationing of atomic military formations and the location of atomic and hydrogen weapons of any kind in that zone.[23] It was prompted by the concern during the Cold War that the military superiority of the Warsaw Pact countries in terms of conventional weapons would prompt the stationing of nuclear weapons along the Iron Curtain by the North Atlantic Treaty Organization (NATO).

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22. International Court of Justice, Advisory Opinion on the Legality of the Threat or Use of Nuclear Weapons (8 July 1996), www.icj-cij.org, paragraphs 48, 67, 73.

23. Official Records of the Disarmament Commission, Supplement for January to December 1956, Document DC/83, Annex 5 (DC/SC.1/41), cited in the Conference of the Committee on Disarmament (CCD) Comprehensive Study of NWFZs, Conference of the Committee on Disarmament, Comprehensive Study of the Question of Nuclear-Weapon-Free Zones in All Its Aspects: Special Report, United Nations, 1976, at page 19. The United States has nuclear weapons stationed in Europe: Belgium, Germany, Italy, the Netherlands, Turkey and the United Kingdom under a "nuclear-sharing arrangement" incorporated into the 1999 NATO Strategic Concept. In addition, France and United Kingdom have their own stockpiles. See further, Nordstrom, Jennifer and Acheson, Ray (eds.), Model Nuclear Inventory, published by Women's International League for Peace and Freedom (2007), www.reachingcriticalwill.org, at page 50. See also, Acronym Report on NATO and Nuclear Weapons, www.acronym.org.uk/nato/npt2007.htm.

The plan, published in 1958, proposed that the countries in the zone would not manufacture, maintain, possess or admit into their territories nuclear weapons or installations and equipment designed to service nuclear weapons, including missile-launching equipment. It also proposed that the four NWS (China was not yet one) would agree not to transfer such weapons or equipment to the states of the zone, not to maintain nuclear weapons in their armed forces stationed in the zone and not to use nuclear weapons against the zone. The plan included ground and aerial control and inspections and the creation of a supervisory body.

The rationale for the deployment of nuclear weapons in NATO countries disappeared following the end of the Cold War and the dissolution of the USSR and the Warsaw Pact. However, the NWFZ concept remained relevant to protect the post-Cold War peace gains that potentially could be threatened by NATO expansion. NATO enlargement has, in fact, occurred with former Warsaw Pact members joining (Albania, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia). NATO's nuclear posture and strategy are particularly important for these new NATO members. In 2001, the NATO Nuclear Planning Group reaffirmed that "[n]uclear forces are a credible and effective element of the alliance's strategy of preventing war; they are maintaining the minimum level sufficient to preserve peace and stability".[24] A NWFZ in the sub-region by its very nature would require the withdrawal of any remaining tactical nuclear weapons in the zone[25] which could be problematic. Nevertheless, Greece was apparently successful in having the weapons stationed in its territory removed in 2001. Why and to where they were moved is not clear.[26]

The Russian Federation endorsed the Central European zone in principle.[27] However, the U.S. withdrawal from the Anti-Ballistic Missile (ABM) Treaty, and from supporting the Comprehensive Nuclear-Test-Ban Treaty (CTBT), together with its proposed installation of missile shields in the Czech Republic and Poland had an impact on the trust and confidence-building which security treaties are designed to cultivate. The momentum for disarmament significantly deteriorated, contributing to regional insecurity and tension with the Russian Federation and essentially making the NWFZ in Central Europe impossible.

2.2 The Antarctic Treaty

The 1959 Antarctic Treaty provides that Antarctica shall be used exclusively for peaceful purposes. It prohibits, *inter alia*, any measure of a military nature and was the first legally-binding instrument establishing a demilitarised zone, specifically prohibiting any nuclear explosions and the disposal of radioactive waste. Article 5(2) provides that the rules embodied in international agreements concerning the use of nuclear energy, including nuclear explosions and the disposal of radioactive waste material, will be applied to Antarctica provided that all the original contracting parties and "those parties which demonstrate their interest in the continent are also parties to such agreement or agreements".

The control system created by the treaty is based on national means of verification carried out through inspections by observers designated by the parties. The observers have full access at any

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24. Quoted in Nordstrom, Jennifer and Acheson, Ray (eds.), "Model Nuclear Inventory", published by Women's International League for Peace and Freedom (2007), www.reachingcriticalwill.org, page 50.

25. Transnational Institute, Concept Paper for and Report of the International Seminar on Nuclear Weapon-Free Zones: Crucial Steps towards a Nuclear-free World, Uppsala, Sweden, 1-4 September 2000, www.tni.org/detail_page.phtml?page=acts_uppsala&print_format=Y.

26. See further, Nordstrom, Jennifer and Acheson, Ray (eds.), *op. cit.*, at page 59.

27. *Ibid.*

moment to any area or installation and to all ships and aeroplanes at points of discharge and embarkation in the continent.

What prompted states to establish the Antarctic Treaty system? Its strategic importance militarily came to the forefront during World War II when British warships protected the Allies' transport ships from German submarines, and Cold War fears that a military base in Antarctica could control the Southern Ocean and the South Atlantic, that led to the conclusion of the treaty. The entire continent was demilitarised and all territorial claims suspended. At its first review conference, 30 years after the treaty's entry into force, an additional protocol on environmental protection was concluded.[28]

There are 47 parties to the Antarctic Treaty.

2.3 Outer Space Treaty

In 1958, the USSR first introduced a draft resolution in the UN General Assembly calling for a ban on the use of cosmic space for military purposes. In 1961, the United States proposed its programme for general and complete disarmament, including a ban on placing in orbit vehicles carrying weapons of mass destruction.[29] Two years later, Mexico submitted the outline of a draft treaty to the Conference of the Eighteen-Nation Committee on Disarmament prohibiting the orbiting, stationing or testing in outer space of nuclear weapons or other weapons of mass destruction. Following negotiations and agreement on the text, the Outer Space Treaty[30] was commended by the UNGA[31] and in 1967 opened for signature.[32]

Article IV of the treaty explicitly provides that states parties will not place in orbit around the earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction. Also, they will not install such weapons on celestial bodies or station such weapons in outer space in any other manner. It provides further that all military activity, including the testing of any type of weapons, is prohibited on the moon and other celestial bodies.

There are 105 parties to the Outer Space Treaty.

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28. Stoller, Paul Lincoln, "Protecting the White Continent: Is the Antarctic Protocol Mere Words or Real Action?", *12 Arizona Journal of International and Comparative Law* (1995), 335-366 at 347-348.

29. Department of State Publication 7277, Disarmament Series 5, September 1961, available at: www.tpromo.com/gk/files1/7277.htm.

30. 1967 Treaty on the Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, entered into force on 10 October 1967, 610 UNTS, No. 8843.

31. UNGA Resolution 2222 (XXI)(1966).

32. Conference of the Committee on Disarmament (CCD), Comprehensive Study of the Question of Nuclear-Weapon-Free Zones in All Its Aspects: CCD/467 (1975) and UN Document A/10027/Add.1 (1976), paragraphs 12-15.

2.4 Treaty of Tlatelolco

The 1967 Treaty of Tlatelolco was the first NWFZ established in a densely populated area. The Cuban Missile Crisis provided the political momentum to an initiative by the President of Mexico to negotiate and conclude the instrument[33] which was originally signed by only 21 states in 1967.

It took 35 years for all 33 states in the region to become party to it. The main obstacles to adherence were the nuclear programmes of Argentina and Brazil, but after 9 years Argentina and Brazil were able to agree on a common nuclear co-operation and non-proliferation policy including a bilateral inspectorate known as the Brazilian-Argentine Agency for Accounting and Control (ABACC). They also concluded a Quadripartite Safeguards Agreement (Argentina, Brazil, ABACC and the IAEA) which entered into force in 1994.[34] Brazil became party in 1968 and Argentina in 1994. Cuba was the last state in the region to join in 2002. The Tlatelolco Treaty process largely contributed to building regional trust and confidence and could well serve as an example for other regions, notably the Middle East.

Going beyond the NPT, the Treaty of Tlatelolco prohibits (a) the testing, use, manufacture, production or acquisition by any means of any nuclear weapons directly or indirectly, (b) the receipt, storage, installation, deployment and any form of possession of nuclear weapons directly or indirectly and (c) engaging in, encouraging or authorising directly or indirectly or in any way participating in the testing, use, manufacture, production, possession or control of any nuclear weapon. The treaty creates a body to implement and ensure compliance with its terms – the Agency for the Prohibition of Nuclear Weapons in Latin America (OPANAL)[35] – with a permanent Secretariat in Mexico City. Like the NPT, it establishes the right to use nuclear energy for peaceful purposes and requires the application of International Atomic Energy Agency (IAEA) safeguards to all nuclear activities.

Article 18 provides the right to carry out nuclear explosions for peaceful purposes. Given the difficulty of determining whether a nuclear explosive device is for peaceful purposes or not, states parties to the Treaty of Tlatelolco agreed to a moratorium on such explosions until it became technically feasible to do so. In the meantime, all parties except four (Cuba, Dominica, Saint Vincent and the Grenadines and Trinidad and Tobago) have signed and ratified the 1996 Comprehensive Nuclear-Test-Ban Treaty (CTBT) which prohibits all nuclear explosions in any environment for any purpose. Even though the CTBT is not yet in force, by virtue of Article 18 of the Vienna Convention on the Law of Treaties, the signatory states must refrain from any act defeating the object and purpose of the CTBT. This renders the right to conduct nuclear explosions for peaceful purposes under Tlatelolco null.

As noted earlier, the entry into force clause is quite creative; it provided that all signatory states had the right, when depositing their instruments of ratification, to annex a declaration waiving the requirements of entry into force. In such cases, the treaty would enter into force for the state concerned upon deposit of its declaration. Initially, only Mexico did so, but by 1969, 14 others had followed until

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33. Redick, John, "Precedents and Legacies: Tlatelolco's Contribution to the Next Century", statement delivered at the 30th Anniversary of the Treaty of Tlatelolco, Mexico City, 2005, available at www.opanal.org/Aticles/Aniv-30/redick.htm.

34. Blix, Hans, "The IAEA Full-Scope Safeguards Agreements and Compliance with Them by Parties to the Nuclear-Weapon-Free Zones", statement delivered at the 30th Anniversary of the Treaty of Tlatelolco, Mexico City, www.opanal.org/Articles/Aniv-30/blix.htm.

35. Which stands for *Organismo para la Proscripción de las Armas Nucleares en la América Latina y el Caribe*.

eventually universality was reached. This mechanism allowed for the "staged" creation of the zone by a series of single-state NWFZs, largely contributing to the climate of trust within the region and facilitating adherence. Finally, the Treaty of Tlatelolco attaches two protocols to which certain extrazonal states are eligible to become party. Additional Protocol I concerns territories in the zone which are *de jure* or *de facto* under the jurisdiction of extrazonal states. Additional Protocol II obligates the NWS to fully respect the denuclearization of the zone and not to contribute in any way to acts in the zone in violation of Article 1 of the treaty.

The Treaty of Tlatelolco has achieved universality within the zone: all zonal states are party to it and all extrazonal states are party to the protocols to which they are eligible.

2.5 Seabed Treaty

In 1968, when the question of reserving the seabed and ocean floor of the high seas for peaceful purposes was being considered by the UNGA it was met with widespread support. The following year, the USSR submitted a draft text to the Eighteen-Nation Committee on Disarmament which negotiated the text, and in 1971 the Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Seabed and the Ocean Floor and in the Subsoil Thereof[36] was opened for signature. It entered into force in 1972.

Article I sets forth the obligation "not to emplant or emplace on the seabed and the ocean floor and in the subsoil thereof beyond the outer limit of a seabed zone" any nuclear weapons or any other types of weapons of mass destruction as well as structures, launching installations or any other facilities specifically designed for storing, testing or using such weapons. The prohibition does not apply to the seabed beneath a coastal state's territorial waters. The outer limit of the seabed zone is the 12-mile limit established by the 1958 Convention on the Territorial Sea and the Contiguous Zone.

Verification allows each state party to observe the activities of other states parties on the seabed and ocean floor as long as it does not interfere with those activities. Issues of compliance may be resolved through consultations and serious concerns may be referred to the UNSC.

There are 97 parties to the Seabed Treaty.

2.6 Treaty of Rarotonga

Almost 20 years after the conclusion of the Treaty of Tlatelolco, the NWFZ concept became politically viable for the South Pacific subregion. After France decided to move its nuclear tests to the atolls of Mururoa and Fangataufa, the momentum to create the zone grew, especially in view of concerns over possible contamination of marine resources by the dumping of radioactive wastes at sea. In 1985, the South Pacific Forum endorsed the text of the South Pacific Nuclear Free Zone Treaty (the Treaty of Rarotonga) and opened it for signature. France completed its last test in the region in 1996 and subsequently signed and ratified the Rarotonga Protocols and the CTBT.

The treaty moves beyond the Treaty of Tlatelolco by defining nuclear explosive devices to include all nuclear explosive devices counting those intended for peaceful nuclear explosions. It requires safeguards on nuclear exports to NWS and NNWS and bans the sea dumping of nuclear waste within the zone.

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36. 1971 Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Seabed and the Ocean Floor and in the Subsoil Thereof, entered into force 18 May 1972, status available at http://disarmament.un.org/TreatyStatus.nsf.

The treaty has three protocols: the first requires extrazonal states, which are internationally responsible for territories situated within the zone (France, United Kingdom, United States), to commit to applying the NWFZ prohibitions and safeguards in those territories; the second requires the five recognised NWS to commit to not using or threatening to use nuclear explosive devices against any party to the treaty or against the relevant territories of the parties to the first protocol; and the third protocol commits the five recognised NWS not to test any nuclear explosive device anywhere in the zone.

There are 13 parties to the Treaty of Rarotonga, with 3 zonal states, the Federated States of Micronesia, the Marshall Islands and Palau not yet having adhered; of the extrazonal states, only the U.S. has not ratified the protocols.

2.7 Treaty of Bangkok

In 1971, the Southeast Asian nations declared their determination to secure the recognition of South East Asia as a zone of peace, freedom and neutrality (ZOPFAN) a concept which includes the notion of a NWFZ. Following the withdrawal of U.S. military forces and its nuclear weapons from the Philippines in 1992, the treaty was drafted and opened for signature.[37]

The Treaty of Bangkok built upon the models of Tlatelolco and Rarotonga by adding "fact-finding missions" to resolve concerns about compliance, requiring nuclear safety assessments of peaceful energy programmes in conformance with IAEA guidelines and standards and containing broad anti-dumping provisions. Its implementing body is the Commission for the South East Asia Nuclear Weapon-Free Zone composed of all states parties.

The Treaty of Bangkok has achieved universality within the zone since all zonal states are party to it. However, extrazonal states have not yet signed, largely due to the fact that the treaty includes exclusive economic zones and continental shelf waters which affect the freedom of transit of NWS ships and submarines bearing nuclear weapons, and which the latter have opposed as being inconsistent with the law of the sea.

2.8 Treaty of Pelindaba

The momentum to create Africa as a NWFZ began in 1960 after France conducted its first nuclear test explosions in the Sahara. The UNGA adopted Resolution 1652 (XVI)(1961) calling upon member states not to carry out nuclear tests in Africa in any form, to refrain from using Africa for testing, storing or transporting nuclear weapons and to consider and respect the continent of Africa as a NWFZ. In 1964, the Assembly of Heads of State of the newly formed Organization of African Unity (OAU) adopted the "Declaration on the Denuclearization of Africa" which the UNGA subsequently endorsed in Resolution 2033 (XX)(1965) and reaffirmed in Resolution 3261E (XXIX)(1974).

Progress on the concept was delayed by the Cold War as well as the covert nuclear weapons programme in South Africa. However, following the dissolution of the USSR and South Africa's announcement that it would abandon its nuclear weapons programme and join the NPT, a common security structure could be established in Africa.[38]

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37. Monterey Institute of International Studies, Nuclear-Weapon-Free-Zone (NWFZ) Clearinghouse, http://cns.miis.edu/nwfz_clearinghouse/index.htm.

38. Adeniji, Oluyemi, The Treaty of Pelindaba on the African Nuclear-Weapon-Free Zone, UNIDIR (2002) at 35.

The treaty goes further than its predecessors by prohibiting armed attacks on nuclear installations (by conventional weapons or other means) and by requiring the physical protection of nuclear material (in response to increased concerns over nuclear trafficking) and the destruction or conversion to peaceful uses of facilities for manufacturing nuclear explosives. It assigns to the IAEA the role of verifying, together with the African Commission on Nuclear Energy (AFCONE), the destruction and dismantling of any nuclear devices and the destruction or conversion of relevant production facilities. Each state party must conclude a comprehensive safeguards agreement with the IAEA for the purpose of verifying that all activities related to the peaceful use of nuclear energy conducted in the state's territory, or under its jurisdiction or control, are carried out for exclusively peaceful uses. It also requires states parties to implement, or use as guidelines, the measures contained in the Bamako Convention[39] to the extent relevant to radioactive waste. Finally, it requires states parties to apply measures of physical protection equivalent to those provided for in the Convention on the Physical Protection of Nuclear Material and in recommendations and guidelines developed by the IAEA for that purpose.

As of June 2009, the Treaty of Pelindaba is not yet in force. Ratification by 28 states is needed and Malawi deposited the 27th instrument of ratification on 23 April 2009. In order to achieve universality, deposits by all 53 zonal states plus the Sahrawi Arab Democratic Republic will be required. Of the extrazonal states, China and France have ratified the protocols to which they are respectively eligible and the Russian Federation, Spain and the United Kingdom have signed. Only the United States has not signed or ratified any.

2.9 Iraqi WMDFZ

Following the Iraqi invasion of Kuwait and the First Gulf War in 1991, the UN Security Council adopted Resolution 687 requiring Iraq to unconditionally accept the destruction, removal or rendering harmless, under international supervision, of its chemical and biological weapons programmes and long-range missiles. It further required Iraq to unconditionally agree not to acquire or develop nuclear weapons or nuclear-weapon-usable material or any subsystems or components or any research, development, support or manufacturing facilities related to the foregoing. It required Iraq to accept urgent on-site inspection and the destruction, removal or rendering harmless of all aforementioned items and to accept future ongoing monitoring and verification of its compliance with those undertakings.[40]

The Security Council noted in Resolution 687 that "the actions to be taken by Iraq … represent steps towards the goal of establishing in the Middle East a zone free from weapons of mass destruction and all missiles for their delivery and the objective of a global ban on chemical weapons".[41]

Between 1991 and 2003, the IAEA collaborated with the United Nations Special Commission (UNSCOM) and its successor the United Nations Monitoring, Verification and Inspection Commission (UNMOVIC) to achieve those aims and it now appears that the disarmament aims of UNSC Resolution 687 have, in fact, been met.

However, the imposition of the zone was not consistent with the principle adopted by the UNGA that all zones should be established on the basis of arrangements freely arrived at among the

39. Bamako Convention on the Ban of the Import into Africa and Control of Transboundary Movement and Management of Hazardous Wastes within Africa.

40. UN Security Council Resolution 687 (1991).

41. *Ibid*, paragraph 14.

states of the region concerned and that the initiative should emerge exclusively from within the region. Nevertheless, whatever its origins or legitimacy, the establishment of the zone now does reflect the will of the people who approved a new Constitution for Iraq in a 2005 referendum stipulating in Article 9(E) that "[t]he Iraqi Government shall respect and implement Iraq's international obligations regarding the non-proliferation, non-development, non-production and non-use of nuclear, chemical, and biological weapons and shall prohibit associated equipment, materiel, technologies, and delivery systems for use in the development, manufacture, production, and use of such weapons". It is a *de facto* single-state NWFZ although not meeting the UNGA's definition since the UNGA has not recognised it as one.

2.10 Mongolian NWFZ

Geographically Mongolia is in the unique position of being landlocked by two NWS: China and the Russian Federation. Following the establishment of a democracy in Mongolia in 1990 and the withdrawal of Soviet troops from Mongolian territory in 1992, Mongolia declared itself a NWFZ. It was the first single state NWFZ, and its declaration was welcomed by all NWS and the Non-Aligned Movement.[42] Mongolia's NWFZ was formally recognised by the UNGA in 1998.[43]

In 2000, Mongolia formalised its political declaration in national legislation which defined and regulated its nuclear-weapon-free status.[44] This legislation, together with that of New Zealand in 1987, are the only two examples of statutes which comprehensively regulate and institutionalise the nuclear-weapon-free zone at the national level.

Subsequent to the enactment of Mongolia's legislation the five NWS submitted a joint statement "reaffirm[ing], in the case of Mongolia, their respective unilateral negative security assurances as … referred to in Security Council Resolution 984 (1995) of 11 April 1995".[45]

Mongolia has since become the leader in promoting this concept. It did so most recently in its Working Paper on NWFZs submitted in 2008[46] to the Preparatory Committee for the 2010 Review Conference of the Parties to the NPT. It convened a meeting of the focal points for NWFZs and Mongolia in Ulaanbaatar on 27-28 April 2009 at which co-ordination and co-operation were discussed as well as preparations for the third Preparatory Committee meeting for the 2010 NPT Review Conference.[47] It has strived to seek international recognition and guarantees for, and institutionalisation of, its nuclear-weapon-free status.[48]

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42. UN Document A/53/667-S/1998/1071, Annex I cited in UNGA Resolution 53/77 of 1998.

43. UNGA Resolution A/RES/53/77 (1998) on general and complete disarmament, Section D on Mongolia's international security and nuclear-weapon-free status.

44. Published in English in UN Document A/55/56-S/2000/160 (29 February 2000).

45. UN Document A/55/530-S/2000/1052 (31 October 2000).

46. Mongolia, Working Paper on Nuclear-Weapon-Free Zones (NPT/CONF.2010/PC-II/WP.1), www.reachingcriticalwill.org.

47. Annex I to the Statement by Ambassador J. Enkhsaikahn on a cluster II issue (7 May 2009), www.reachingcriticalwill.org/legal/npt/prepcom09/statements/7MayC2_Mongolia.pdf.

48. Mongolia, Memorandum of the Government of Mongolia on promoting the country's international security and nuclear-weapon-free status, Annex to UN Document A/63/73-S/2008/297, dated 20 May 2008.

Mongolia is currently pursuing talks with China and the Russian Federation on a proposed trilateral treaty on its NWFZ status.[49] It is intended that the treaty will provide that Mongolia shall not be threatened with nuclear weapons, its NWFZ status will be respected, Mongolia will not be used in their geopolitical calculations and that it will be informed of nuclear activities near its territory.[50]

Mongolia has requested assistance through the UNSC 1540 Committee and has received an offer from the United States to fund a project to strengthen Mongolia's import and export controls. In accordance with a memorandum of understanding signed by the two countries in 2007, the project is intended to improve technical systems for the detection and interdiction of illicit trafficking in special nuclear and other radioactive materials at points of entry or exit in Mongolia.

Mongolia has concluded a safeguards agreement and additional protocol with the IAEA and has been co-operating to fully comply with IAEA safeguards and standards.

As Tlatelolco did for the other regional NWFZs, the Mongolian process serves as a useful case study for the establishment of a comprehensive and effective NWFZ in a single state, together with the elements that can also be pursued to achieve international recognition and respect for its NWFZ status.

2.11 Austrian Nuclear-Free Zone

Austria passed federal legislation in 1999 creating a single-state nuclear-free zone.

The Austrian Constitutional Act goes beyond the existing zones in that it:

- Prohibits the establishment of facilities in Austria for the production of energy by nuclear fission or the start-up of existing facilities.
- Prohibits the transport of fissionable materials or spent fuel disposal in the territory.
- Explicitly guarantees "appropriate" compensation for damages caused by a nuclear accident in Austria, enforceable against foreign natural and legal persons causing the damage.[51]

However, the zone has not been recognised as such by the UNGA and this deprives it of the status enjoyed by the Mongolian NWFZ at the international level.

During discussions in the 1990s concerning Austria's joining the European Union and NATO, there was public fear that once a member of NATO Austria could be obliged to accept nuclear weapons on its territory. As a result, in 1999, the Austrian constitutional law was adopted, banning nuclear weapons and nuclear power. It will take a two-thirds majority of all votes in parliament to change the law.[52]

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49. *Ibid.*

50. Speech by H.E. Dr. Jargalsaikhany Enkhsaikhan on 28 January 2009 in Vienna.

51. Federal Constitutional Act concerning a Nuclear-Free Austria, passed on 1 July 1999 and entered into force on 13 August 1999, www.lcnp.org/disarmament/nwfz/AustriaAct(eng).htm.

52. Renoldner, Klaus, "From Referendum to Constitutional Prohibition of Nuclear Energy: The Austrian Experience with the Nuclear Question", paper presented at the PSR/IPPNW Symposium "Rethinking Nuclear Energy and Democracy after 09/11" (26-27 April 2002).

2.12 Northeast Asia NWFZ

The core countries of a Northeast Asian NWFZ would be the Democratic Republic of North Korea (DPRK), Japan and the Republic of Korea (ROK). The foundation already exists in the Joint Declaration of the Denuclearization of the Korean Peninsula which entered into force for the DPRK and the ROK in 1992. Numerous proposals have been made over the years,[53] but the concept has lost its viability due to the declared withdrawal of the DPRK from the NPT in 2003 and the two nuclear weapon tests it claims to have carried out in October 2006 and May 2009.

Nevertheless, due to the shift in attitude by the United States towards the CTBT and nuclear disarmament in general, it is conceivable that the concept of a Northeast Asia NWFZ could be introduced into the six party talks between the DPRK, ROK, China, Japan, the Russian Federation and the United States and progress achieved there.

2.13 Treaty of Semipalatinsk

The dissolution of the USSR, together with the removal of nuclear weapons from Kazakh territory by the Russian Federation, created the conditions necessary to establish a NWFZ in Central Asia. Prompted by Mongolia's declaration of its NWFZ status in 1992, the President of Uzbekistan proposed a Central Asian zone in 1993. Consensus among the five states of the region (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan) was reached and declared in Almaty in 1997. The uniting factor that helped consensus to be reached was apparently the environmental problems that have arisen for each of the five states as a result of previous Soviet nuclear weapons production, testing or infrastructure activities in their territories. The treaty was opened for signature in December 2006, the requisite fifth ratification was deposited by Kazakhstan in 2008[54] and the treaty entered into force on 21 March 2009.[55]

The Central Asian republics are surrounded by the NWS China, India, Pakistan and the Russian Federation and they host Russian and U.S. military presence. The zone was initially endorsed by the UNGA in its resolution of 1999[56] after amendments to the resolution which were proposed by the NWS were accepted.

The treaty has gone further than the previous NWFZ treaties by explicitly incorporating the prohibitions of the CTBT. It requires the parties to assist with the environmental rehabilitation of territories contaminated as a result of past activities related to the development, production or storage of nuclear weapons or other nuclear explosive devices, in particular uranium tailings storage sites and nuclear test sites. The parties are to bring into force a safeguards agreement, as well as the additional protocol with the IAEA, within 18 months after entry into force. Export controls shall prohibit

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53. See further: Umebayashi, Hiromichi, "A Draft Northeast Asia Nuclear-Weapon-Free Zone Treaty: A Basis for Discussion", *The Mongolian Journal of International Affairs*, No. 14 (2007) pp. 37-42 and Kaneko, Kumao, "The Key Elements of the Draft Treaty Establishing Northeast Asia Nuclear-Weapon-Free Zone, *ibid,* pp. 51-54.

54. Potter, William, "Central Asia becomes a Nuclear-weapon-free Zone", CNS Feature Stories, (11 December 2008), available at http://cns.miis.edu/stories/081201_canwfz.htm.

55. United Nations, "Secretary-General welcomes entry into force of historic treaty on nuclear-weapon-free-zone in Central Asia", UN document SG/SM/12143, DC/3160, dated 20 March 2009.

56. UNGA Resolution 53/77 (1999) on General and Complete Disarmament, Section A on the Establishment of a Nuclear-Weapon-Free Zone in Central Asia.

transfers of materials under safeguards to a NNWS unless it has also concluded both a comprehensive safeguards agreement and an additional protocol.

China and the Russian Federation expressed support for the treaty, while France, the United Kingdom and the United States. tried to block efforts to welcome it in the UN and NPT Review Conference meetings.[57] Despite initial opposition, the UN General Assembly has now welcomed the establishment of the zone and the convening of an international conference on the problem of uranium tailings to be held in Bishkek in 2009.[58] In the recorded vote, 141 states voted in favour, 3 voted against the resolution (France, United Kingdom, United States) and 36 abstained.[59]

The Treaty of Semipalatinsk has achieved universality within the zone since all zonal states are party to it. The treaty's protocol is not yet open for signature by extrazonal states and adherence could be problematic given that the treaty explicitly provides that it does not affect the rights and obligations of the parties under other treaties including those which call for mutual military assistance.

2.14 NWFZ or WMDFZ in the Middle East

In 1974, Iran formally requested the UNGA to include in the agenda an item related to the proliferation danger posed by wider access to nuclear technology. The request was joined by Egypt and, following the debate, the UNGA adopted Resolution 3263 (XXIX)(1974) in which it commends the creation of a NWFZ in the Middle East.

Decision 2 of the 1995 NPT Review Conference was on the establishment of a NWFZ in the Middle East. As such, it formed part of the bargain that enabled NPT states parties to agree on the indefinite extension of the treaty. The decision was reaffirmed in the 2000 NPT review conference.

The UNGA and the IAEA General Conference routinely adopt resolutions promoting the establishment of a NWFZ in the Middle East.[60] The IAEA Director-General has been requested by the General Conference to take measures to facilitate the early application of comprehensive safeguards to all nuclear activities in the region and to prepare model agreements as a step towards the establishment of a NWFZ. According to former Director-General Hans Blix, the IAEA's verification arrangements in a Middle East NWFZ "would have to be supplemented by very stringent and intrusive regional arrangements" involving, for example, mutual inspections carried out by regional inspectors working in addition to or with IAEA inspectors.[61]

For its part, Israel considers that the process leading towards the establishment of a NWFZ "clearly cannot begin in situations where some of the parties concerned still maintain a state of war

57. According to the Monterey Institute's Center for Nonproliferation Studies.

58. UNGA Resolution 1/RES/63/63, dated 12 January 2009.

59. UN Document A/63/PV.61, 2 December 2008, pp. 19-20.

60. Most recently, UNGA Resolution 62/18 (2008) on the Establishment of a nuclear-weapon-free zone in the region of the Middle East and IAEA General Conference resolution GC(52)/RES/15, dated October 2008 on the application of IAEA safeguards in the Middle East.

61. Blix, Hans, The IAEA full-scope Safeguards Agreements and compliance with them by Parties to the Nuclear-Weapon-Free Zones, statement delivered at the 30th Anniversary of the Treaty of Tlatelolco, Mexico City, 2005, www.opanal.org/Articles/Aniv-30/blix.htm.

with each other, refuse in principle to maintain peaceful relations with Israel or even recognise its right to exist".[62]

The four major and interlocking factors challenging the establishment of the zone are identified as (1) the current security vacuum in Iraq, (2) the perceived regional ambitions of the Iranian regime and its suspected nuclear weapons programme, (3) the stronger U.S. presence and involvement in the subregion both strategically and physically in terms of its military presence and (4) the ongoing threat of Israel's nuclear capability (perceived and actual).[63]

Positive developments which could facilitate the establishment of such a zone are identified as (1) the Gulf as an identifiable region (rather than a grouping of like-minded states), (2) the neutralisation of Iraq as a WMD threat and (3) the fact that all nine states have signed the majority of WMD disarmament treaties. The principle benefit of creating the zone would be its foundation for the development of a regional security arrangement.

Progress on this zone is at a standstill.

2.15 NWFZ in South Asia

Following India's test of a nuclear explosion for peaceful purposes in 1974, Pakistan requested that the question of the establishment of a NWFZ in South Asia be discussed in the UNGA. The five NWS supported the proposal, but India objected to the fact that no consultations as to the implications, feasibility and acceptability of the proposal had been conducted before the item was inscribed on the agenda. India stated its view that no regional arrangements could be imposed from the outside; rather they should be developed from within, and the security environment of Asia and the Pacific as a whole had to be taken into account. Neither could the zone be established as long as nuclear weapons existed in the region. Nevertheless, the UNGA adopted Resolution 3265 A and B (XXIX)(1974).

Although all states except India have voted in favour of the UNGA resolutions on the establishment of a NWFZ in South Asia, the likelihood of its creation has become ever weaker following the nuclear weapons tests by both India and Pakistan in 1998. Currently both remain outside the NPT and maintain their status as *de facto* NWS. The sanctions established by the UNSC in 1998 following the tests were withdrawn after the terrorist attacks on the United States in September 2001 in order to secure co-operation for effective counterterrorism activities in the two countries. Most recently, India was granted an exemption by the Nuclear Suppliers Group in 2008 in order to allow sales of nuclear technology and fuel to be made.[64] Several states, including France, the Russian Federation and the United States have concluded nuclear co-operation agreements with India. A special safeguards agreement was signed by India and the IAEA on 2 February 2009.[65]

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62. Israel, Statement to the UNGA First Committee on the Explanation of vote on the Establishment of a NWFZ in the Middle East (23 October 2006), available at: www.reachingcriticalwill.org/political/1com/1com/res/cov1israeloc123.doc.

63. Gulf Research Center, Summary of the Workshop on "Voices from the Region": The Gulf as a WMD Free Zone, Dubai, 10-12 December 2004).

64. NSG Statement on Civil Nuclear Cooperation with India, INFCIRC 734 (Corrected), text reproduced in *Nuclear Law Bulletin* No. 82, page 83.

65. An Agreement with the Government of India for the Application of Safeguards to Civilian Nuclear Facilities, the text of the agreement is reproduced in *Nuclear Law Bulletin* No. 82, page 57.

2.16 NWFZ in the Southern Hemisphere

In 2001, the UNGA called upon the parties and signatories to the NWFZ treaties to pursue the common goals envisaged in those treaties, to promote the nuclear-weapon-free status of the southern hemisphere and adjacent areas and to explore and implement further ways and means of co-operation among themselves and their treaty agencies. It suggested that an international conference might support that effort.[66] Taking advantage of the attention of states focused on the NPT review conference in 2005, the first conference of states parties and signatories to the treaties that establish nuclear-weapon-free zones was convened in Tlatelolco, Mexico, from 26 to 28 April 2005 in order to analyse ways of co-operating which would contribute to the achievement of a nuclear-weapon-free world.

While the final document of the 2005 conference reaffirmed every aspect of the NWFZ concept, no significant momentum was created to establish any formal co-operation among the parties, their treaty agencies and other interested states.[67] Presumably limited human and financial resources are a principal obstacle to this initiative since some of the states eligible to participate are the smallest in the world.

Given the fact that the total number of states which fall within a NWFZ now totals 119 encompassing entire continents, millions of people and over 50% of the earth's landmass, they could form a formidable political bloc in disarmament fora.[68]

2.17 Arctic nuclear-weapon-free zone

Global warming and the melting of the polar icecap have led to the prospect of commercial ship navigation through the Arctic and access to the resources lying at the polar ice cap.[69] There is increasing focus on territorial claims and militarisation of the region, similar to what happened when access to Antarctica became feasible. In 2007, Pugwash, a non-governmental organisation concerned with the environmental damage and strategic tension that could ensue, called for the creation of a NWFZ in the waters of the Northwest Passage. This NWFZ could be expanded at a later stage into a zone covering the territory and waters north of the Arctic Circle.[70] Key to this question is the

66. UNGA Resolution A/56/24 G (2000).

67. See further UN Document A/60/121, Annex III.

68. This potential is currently being pursued under the leadership of Mexico which convened the first conference of the focal points of the NWFZ treaties and Mongolia in Ulaanbaatar on 27–28 April 2009 as discussed above under section 2.10. The meeting agreed that preparations would continue for the second conference to be held in 2010. In May 2009, at the third meeting of the Preparatory Committee for the 2010 NPT Review Conference, Mongolia submitted a summary of the Ulaanbaatar meeting, Mexico called for the second conference of NWFZ states in 2010 and Chile affirmed the possibility that it will lead it.

69. National Snow and Ice Data Center, Boulder, CO (August 2007) and National Resources Defense Council, Washington, DC 9 November 2005), both cited in: *Canadian Pugwash Call for an Arctic Nuclear-Weapon-Free Zone*, Pugwash Online (24 August 2007) www.pugwash.org/reports/nw/canadian-pugwash.htm.

70. Canadian Pugwash Call for an Arctic Nuclear-Weapon-Free Zone, *Pugwash Online* (24 August 2007) www.pugwash.org/reports/nw/canadian-pugwash.htm.

resolution of the dispute over whether the Northwest Passage is an international strait or whether it falls within Canada's internal waters.[71]

The initiative is unlikely to be embraced given the current strategic importance of the waters for nuclear-capable submarine navigation, patrols by the Russian Federation and the United States, aerial flyovers and the fact that the other states circling the zone are NATO members. However, the situation could change depending upon developments, public opinion and pressures which may occur as a result of climate change fears.

3. Definition, scope and progressive development of the concept

a. Definition of the concept of a NWFZ

As a result of the 1975 Comprehensive Study on NWFZs, the UNGA adopted a declaration in which it defined the concept of a NWFZ as follows:

> I. Definition of the concept of a nuclear-weapon-free zone
>
> 1. A "nuclear-weapon-free zone" shall, as a general rule, be deemed to be any zone, recognized as such by the General Assembly of the United Nations, which any group of States, in the free exercise of their sovereignty, has established by virtue of a treaty or convention whereby:
>
> (a) The statute of total absence of nuclear weapons to which the zone shall be subject, including the procedure for the delimitation of the zone, is defined;
>
> (b) An international system of verification and control is established to guarantee compliance with the obligations deriving from that statute.[72]

At the same time, the UNGA reaffirmed the principle that "there should be an acceptable balance of mutual responsibilities and obligations of the nuclear-weapon and non-nuclear-weapon states". Consequently, in the second part of its declaration, the UNGA defined the related obligations of the NWS:

> II. Definition of the principal obligations of the nuclear-weapon States towards nuclear-weapon-free zones and towards the States included therein
>
> 2. In every case of a nuclear-weapon-free zone that has been recognized as such by the General Assembly, all nuclear-weapon States shall undertake or reaffirm, in a solemn international instrument having full legally binding force, such as a treaty, a convention or a protocol, the following obligations:
>
> (a) To respect in all its parts the statute of total absence of nuclear weapons defined in the treaty or convention which serves as the constitutive instrument of the zone;

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71. *Arctic Security in the 21st Century,* Conference Report, The Simons Foundation and the School of International Studies of the Simon Fraser University, 11-12 April 2008, www.sfu.ca/internationalstudies/ Arctic_ Security_Conference.pdf.

72. UNGA Resolution 3472 (XXX) (1975), Section B.

(b) To refrain from contributing in any way to the performance in the territories forming part of the zone of acts which involve a violation of the aforesaid treaty or convention;

(c) To refrain from using or threatening to use nuclear weapons against the states included in the zone.[73]

The UNGA retains flexibility for the development of the concept, having decided that the above definitions in no way impair resolutions which the UNGA has adopted or may adopt with regard to specific NWFZs.[74] This allows it to expand the concept to include the single-state NWFZ. "[O]bligations relating to the establishment of NWFZs may be assumed not only by groups of states, including entire continents or large geographical regions, but also by smaller groups of states and even individual countries".[75]

Given that the seabed, outer space, the moon and Antarctica are already NWFZs, the high seas are reserved for peaceful purposes and the NPT prohibits the 185 or 186 NNWS from any and all activities related to nuclear weapons, what added value does a NWFZ contribute? The two most important benefits achieved by the creation of the zone are the following:

- Restrictions not explicitly foreseen by the NPT can be established, such as the prohibition of the stationing of nuclear weapons on the territory of zonal states, the dumping of nuclear waste at sea and a strong legal basis to deny the entry of vessels carrying nuclear weapons into its territory and territorial waters.

- If the designated extrazonal states adhere to the protocol(s), the parties to the treaties enjoy legally-binding negative security assurances by the NWS that they will not use nuclear weapons against the zone, in contrast to the conditional and ambiguous unilateral declarations made by each NWS under the NPT to NNWS.[76] Furthermore, in becoming party to the protocols, the extrazonal states commit themselves to abstain from undertaking any activities which would erode the zone such as inducing the NWFZ states to accept nuclear weapons on their territory or missile defence etc.

b. Overview over the significant elements of the various NWFZ treaties

The concept of NWFZ evolved with the establishment of each zone. The following are the significant elements achieved in the successive instruments:

Treaty of Tlatelolco

- Defines for the first time "nuclear weapons".

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73. *Ibid.*

74. *Ibid.*

75. First principle for the establishment of NWFZs, recommended in the 1975 Comprehensive Study of the Question of Nuclear-Weapon-Free Zones in All Its Aspects, *op. cit.,* page 31, and endorsed by the UN General Assembly in paragraph 4 of UNGA Resolution 31/70 (1976).

76. S/1995/261, S/1995/262, S/1995/263, S/1995/264, S/1995/265 (1995), noted with appreciation by the United Nations Security Council in its Resolution S/RES/984 (1995).

- Requires the contracting parties to prohibit and prevent in their respective territories: the testing, use, manufacture, production or acquisition by any means whatsoever of any nuclear weapons, by the parties themselves, directly or indirectly, on behalf of anyone else or in any other way; and the receipt, storage, installation, deployment and any form of possession of any nuclear weapon, directly or indirectly, by the parties themselves, by anyone on their behalf or in any other way.

- Requires the contracting parties to refrain from engaging in, encouraging or authorising, directly or indirectly, or in any way participating in the testing, use, manufacture, production, possession or control of any nuclear weapon.

- Nuclear activities are reserved for peaceful purposes.

- Peaceful nuclear explosions are permitted.

- Requires contracting parties to place all nuclear materials and facilities under safeguards, pursuant to agreements concluded with the IAEA.

Treaty of Rarotonga

- Defines "nuclear explosive devices" in such a way as to include peaceful nuclear explosions within the ban.

- Requires safeguards on nuclear exports to NWS and NNWS.

- Bans the dumping of nuclear waste at sea within the zone.

Treaty Bangkok

- Includes the respective exclusive economic zones and continental shelf waters in the zone which potentially affects the freedom of transit of the ships and submarines bearing nuclear weapons of NWS.

- Provides for "fact-finding missions" to resolve ambiguity or concerns about compliance.

- Requires a rigorous nuclear safety assessment of any peaceful energy programme in conformance with IAEA recommended guidelines and standards prior to embarking on the programme.

- Requires the application of full scope safeguards on any peaceful nuclear activities.

- Broadens the prohibition on dumping further than that of the Treaty of Rarotonga.

Treaty of Pelindaba

- Prohibits research on nuclear explosive devices.

- Prohibits armed attacks on nuclear installations (by conventional weapons or other means).

- Requires the physical protection of nuclear material (in response to increased concerns over nuclear trafficking).

- Requires destruction or conversion to peaceful uses of facilities for manufacturing nuclear explosives.

- Requires a comprehensive safeguards agreement with the IAEA.

- Requires states parties to implement or to use as guidelines the measures contained in the Bamako Convention in so far as it is relevant to radioactive waste.

- Requires states parties to apply measures of physical protection equivalent to those provided for in the Convention on the Physical Protection of Nuclear Material and in recommendations and guidelines developed by IAEA for that purpose.

- Encourages states parties to make use of the IAEA's assistance programme and to strengthen co-operation under the African Regional Cooperation Agreement for Research, Training and Development Related to Nuclear Science and Technology (AFRA).

Treaty of Semipalatinsk

- Requires the parties to prohibit, in accordance with the CTBT, nuclear weapon test explosions and any other nuclear explosion.

- Requires the parties to assist with the environmental rehabilitation of territories contaminated as a result of past activities related to the development, production or storage of nuclear weapons or other nuclear explosive devices, in particular uranium tailings storage sites and nuclear test sites.

- Requires the parties to bring into force safeguards agreements as well as additional protocols within 18 months after entry into force.

- Requires export controls which prohibit transfers to NNWS unless they have also concluded both a comprehensive safeguards agreement and an additional protocol.

- Requires the parties to take all necessary measures for effective implementation of the treaty (i.e. adopt implementing legislation and administrative measures).

c. Role of the IAEA

As the concept has developed, so has the role of the IAEA in terms of development, implementation and verification of compliance with NWFZ arrangements.[77]

Initially, under the Treaty of Tlatelolco, each state party was to negotiate a safeguards agreement for application to its nuclear activities which the IAEA would verify. There were also to be special inspections which the Council established by the Treaty of Tlatelolco was entrusted to carry out. In 1992, the General Conference of OPANAL amended the treaty to enhance the role of the IAEA and give it the mandate to carry out special inspections not just in the safeguards context, but in verifying compliance with any of the obligations by the parties, upon request. The Treaty of Bangkok

77. Blix, Hans, The IAEA full-scope Safeguards Agreements and compliance with them by Parties to the Nuclear-Weapon-Free Zones, statement delivered at the 30th Anniversary of the Treaty of Tlatelolco, Mexico City, 2005. www.opanal.org/Articles/Aniv-30/blix.htm.

requires three IAEA officials to participate in any "fact-finding mission" carried out under the treaty. The Treaty of Pelindaba assigned an additional role to the IAEA which is responsible for verifying, together with AFCONE (the Pelindaba Treaty implementing body), the destruction and dismantling of any nuclear devices and the destruction or conversion of relevant production facilities.

d. Weaknesses of the concept of NWFZs

The following weaknesses in the concept of NWFZs still need to be addressed:[78]

- Since each state party is free to decide whether to allow "visits" by foreign vessels and there is no limitation on the duration of such visits, this could ultimately impinge on the prohibition against stationing nuclear weapons on the territories of zonal states. Furthermore, since the NWS practice a policy of "neither confirm nor deny", the zonal state will never know whether the vessel seeking clearance to transit is carrying nuclear weapons or not.

- NWFZ treaties do not prohibit the presence of installations related to the support of nuclear weapons programmes such as communications, surveillance, navigation systems and intelligence-gathering. The presence of such infrastructure could meet the criteria necessary to constitute a militarily-justifiable target under the Geneva Conventions. In order to meet the stated purpose of the NWFZ – improvement in regional security – such installations should be removed and prohibited by the treaty.

- Verification of compliance by the zonal states is performed by the IAEA; however, respect for the NWFZ treaty by extrazonal states is not subject to verification.

- Withdrawal clauses should be eliminated or strengthened to provide for stricter conditions for withdrawal.

- Negative security assurances by the NWS are weak since conditions have been attached to them. Such assurances should be legally-binding and unconditional.

- None of the NWFZ treaties have specified that they are valid during peacetime and during armed conflict.

- Research on nuclear explosive devices is only prohibited by the Treaty of Pelindaba and by the Treaty of Semipalatinsk.

- Only the Treaty of Pelindaba prohibits attacks on nuclear facilities.

- Only the Treaty of Rarotonga, the Treaty of Pelindaba and the Treaty of Semipalatinsk specify their bans cover nuclear explosive devices in unassembled or partly assembled forms.

78. Goldblat, Jozef, "Nuclear-weapon-free zones: advantages, shortcomings and prospects", paper presented at the GIPRI/UNIDIR meeting on 30 April 2006; and Goldblat, Jozef, "Nuclear-Weapon-Free Zones: A History and Assessment", *The Nonproliferation Review* (Spring-Summer 1997), http://cns.miis.edu/npr/pdfs/goldbl43.pdf.

- Nuclear-weapon-related support facilities serving the strategic systems of the NWS are not banned by any NWFZ treaty.

- Only the Treaty of Tlatelolco and the Treaty of Bangkok provide for the denuclearization of maritime areas adjacent to the territorial waters of zonal states.

4. National implementation and enforcement

The NWFZ treaties in force are binding upon the respective state parties at the international level, *vis-à-vis* each other. In some legal systems, i.e. those adhering to a "monist" system, the treaties also have full force and effect at the national level automatically upon entry into force.

None of the early NWFZ treaties required state parties to take, in accordance with their constitutional processes, any necessary measures to implement their obligations under the respective treaties. To a certain extent, the Treaty of Pelindaba does so, explicitly requiring that parties prevent the dumping of radioactive waste by implementing or using as a guideline the Bamako Convention and the Convention on the Physical Protection of Nuclear Material. Going further, the Treaty of Semipalatinsk requires its parties to take all necessary measures for effective implementation of the purposes and objectives of the treaty. Even without such explicit provision, it is a general duty for each state to bring its national law into conformity with its obligations under international law. The 1969 Vienna Convention on the Law of Treaties provides that treaties in force are binding upon the parties to them and must be performed by them in good faith. Its Article 27 provides further that a party to a treaty may not invoke the provisions of its internal law as justification for its failure to perform a treaty.

Consequently, even though the treaties are silent in this respect, their texts must be examined to determine whether national measures will be necessary in order to implement the treaty. These measures might range from (a) statutory and/or penal code provisions adopted or amended by the national legislature to (b) ordinances and regulations promulgated by the executive branch. Preventing the development of nuclear explosive devices implies that import/export controls will be established or amended to include all nuclear materials, technology and equipment under safeguards.

This is particularly important with respect of the enforcement of the treaties. While the treaties do not explicitly state that there is an obligation to impose criminal sanctions on natural and legal persons for breaches of the prohibited activities, it is inherent that activities prohibited at an international level will be proscribed and enforced at a national level.

Although it is unlikely that a militarily significant nuclear weapon could be developed outside the state's purview, it has been suggested that the development of a nuclear explosive device by non-state actors, including terrorist cells, is possible. As Luis W. Alvarez[79] stated "[m]ost people seem unaware that if separated U-235 is at hand it's a trivial job to set off a nuclear explosion, whereas if only plutonium is available, making it explode is the most difficult technical job I know".[80] The IAEA

79. Key physicist in the Manhattan Project in which the first nuclear weapons were developed in the U.S. and subsequently Nobel Laureate in physics.

80. Alvarez, Luis W., "Adventures of a Physicist", New York, Basic Books (1987) 125, cited in the lecture given by Professor Francesco Calogero, University of Rome, in the 2008 session of the International School of Disarmament Research (ISODARCO), Andalo, Italy, January 2008. See also Allison, Graham, "The Ongoing Failure of Imagination", *Bulletin of the Atomic Scientists* (September/October 2006) pp. 34-41 and Arkin, William M., "The Continuing Misuses of Fear", *ibid,* pp. 42-45.

has found that there is a persistent problem with illicit trafficking in nuclear and other radioactive materials, thefts, losses and other unauthorised activities.[81] The determination of terrorists to buy, build or steal a nuclear weapon is being recognised at the highest echelons of government as a likely possibility.[82] The magnitude of the threat is such that the United Nations Security Council adopted a binding resolution in 2004 requiring states to adopt measures to prevent proliferation among non-state actors, as will be discussed below. In addition, the Convention for the Suppression of Acts of Nuclear Terrorism was opened for signature in 2005 and entered into force on 7 July 2007.

As a matter of public policy, it can be argued that implementing legislation to enable enforcement of the NWFZ treaties is important even *vis-à-vis* state actors. The NWFZs are durable treaties while governments and national policies change. Covert weapons programmes are a standard feature of military history. National legislation criminalising the research, development, production, possession or use of nuclear weapons and nuclear explosive devices would make it more difficult for successive government administrations to alter the non-proliferation position adopted earlier by the state in the NWFZ treaty. Some states, such as Austria, Brazil, Iraq, Palau and the Philippines, have entrenched the concept at the constitutional level, thus making its reversal a complex national process involving more than one branch of government and public scrutiny.

Even in legal systems where the treaty automatically forms part of national law, the criminalisation of prohibited activities is essential. None of the NWFZ treaties criminalise the prohibited activities and none proscribe penalties. The fundamental principle of criminal law is the maxim *nullem crimen, nulla poena sine lege* (no crime, no punishment without law) - the crime must be defined by law and the penalties established before the act is attempted or committed; otherwise prosecution of offenders will not be possible even when the treaty can be invoked at the national level. This is the principle of legality, enshrined in Article 11(2) of the Universal Declaration of Human Rights.[83] The importance of adopting and enforcing such measures has been underscored by the United Nations Security Council in recent years. In the period following the 11 September 2001 terrorist attacks on the United States, the perception of the nuclear proliferation threat expanded to include non-state actors, and the role of the Security Council in non-proliferation increased.

In 2004, in its groundbreaking Resolution 1540 adopted under Chapter VII, the Security Council required *all states* to take measures at the national level to prevent the proliferation of nuclear, chemical and biological weapons among non-state actors. It specified that such measures shall include, *inter alia*, the adoption and enforcement of effective laws, security and material accountancy in production, use, storage or transport, physical protection measures, effective border controls and law enforcement, export, transit, transhipment, re-export and financial controls, and establishment and

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81. IAEA Office of Nuclear Security, New Report on Illicit Nuclear Trafficking: www.iaea.org/NewsCenter /News/2008/itdb.html.

82. Speech of the President of the United States Barack Obama in Prague, 5 April 2009: "the threat of global nuclear war has gone down, but the risk of a nuclear attack has gone up…. Black markets trade in nuclear secrets and materials. The technology to build a bomb has spread. Terrorists are determined to buy, build or steal one". Available at www.nytimes.com/aponline/2009/04/05/washington/APObamaText.html?_r=1&scp=10&sq=nuclear+weapons&st=nyt. See also UN High-Level Panel on Threats, Challenges and Change, "A More Secure World: Our Shared Responsibility", 2004.

83. UNGA Resolution 217 (III) (1948). Article 11(2) No one shall be held guilty of any penal offence on account of any act or omission which did not constitute a penal offence, under national or international law, at the time when it was committed. Nor shall a heavier penalty be imposed than the one that was applicable at the time the penal offence was committed.

enforcement of appropriate criminal and civil penalties for violations of export controls.[84] Thus, regardless of the treaties to which states are party, and regardless of whether those treaties require national implementation and enforcement measures to prevent the proliferation of nuclear weapons, all states must establish them. The Security Council is continuing to renew the resolution and invest resources in achieving its aims.[85]

From a good governance point of view, it makes sense for states to establish the legal and institutional frameworks at national level by which proliferation activities can be identified, searches and seizures conducted, offenders prosecuted and punished. Such frameworks also enable a state to engage in international co-operation for the prevention or prosecution of proliferation activities, including the exchange of information to prevent such crimes. National implementing legislation removes the national territory as a safe haven for perpetrators while at the same time contributing to achieving the object and purpose of the NWFZs and addressing the threats in a meaningful way.

A case in point is the 2004 South African experience concerning the investigation and arrests of three businessmen for their participation in the nuclear smuggling ring of Pakistani scientist A.Q. Khan. The three were suspected of supplying nuclear-related equipment and technology from 1986 to 1995 to the Libyan and Pakistani nuclear weapons programmes. Although South Africa had adopted strict legislation in the form of the 1993 Non-Proliferation of Weapons of Mass Destruction Act, the regulations to implement that act were only adopted in 1994. As a result, the accused could only be prosecuted for acts committed in 1994 and 1995, while all previous activities between 1986 and 1993 went uncharged and unpunished. The crimes prosecuted included importing and re-exporting equipment, manufacturing and exporting sensitive components and forging documents in order to acquire sensitive equipment and technology.[86]

Implementation of non-proliferation, safety and security legislation strains human and financial resources, and enforcement of legislation can be daunting due to the costs of crime prevention and prosecution. Ultimately, the legal or technical assistance activities of the organisations established to support treaty implementation must be developed and the prospective increase in peaceful nuclear activities must be accompanied by adequate funding to address the safety and security consequences for the states engaging in them. If, as we are led to believe, the threat is real then priority should be assigned to addressing it.

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84. See further, Tabassi, Lisa, "A Note on UN Security Council Resolution 1540 (2004)", CBW Conventions Bulletin, Harvard-Sussex Program, Issue No. 64 (June 2004), pp. 12-13 and Demeyere, Bruno, "The Proliferation of International Nuclear Law's Actors: Resolution 1540 and the Security Council's Fight against Weapons of Mass Destruction Falling into Terrorists' Hands", *Nuclear Law Bulletin* No. 75, pp. 1-27.

85. Report of the Committee established pursuant to resolution 1540, UN document S/2008/493, dated 20 July 2008.

86. Williams, A., "South Africa, Germany Announce Significant Developments in Prosecution of Suspected Khan Network Participants", *WMD Insights* (December 2007 – January 2008), available at: www.wmdinsights.com/I21/I21_AF1_SouthAfricaGermany.htm. For an account of the difficulties encountered in investigating, arresting and prosecuting the participants in the AQ Khan network and the speculation that they are still operating, see Butler, K., Salama S., and Spector, L., "Special Report: The Khan Network, Where is the Justice?", *Bulletin of Atomic Scientists* (November/December 2006), pp. 25-63.

5. Elements of national implementing legislation

As far as can be determined from declarations or reports to the UNSC 1540 Committee, only seven of the 119 NWFZ states have entrenched the concept *per se* in their national legal systems: Austria, Iraq, Mongolia, New Zealand, Palau and the Philippines.[87] Only two states have enacted comprehensive legislation enabling the enforcement of the norms, namely Mongolia[88] and New Zealand.[89] Thus, there are few examples to review when contemplating the structure and format of NWFZ legislation.

The starting point is the NWFZ treaty itself. The national measures necessary could range from (a) statute(s) and/or penal code provisions adopted or amended by the national legislature to (b) the promulgation of complementary ordinances and regulations by the authorised regulatory body and (c) the establishment of a new government office or the assignment of additional responsibilities to an existing competent governmental entity. The prevention of the development of nuclear explosive devices implies that import/export controls will be established or amended to prevent diversion of nuclear materials, technology and equipment and that a licensing regime will be established as well as a state system of accountancy and control.

Many, or most, of the measures necessary may already be in place. Due to the centrality of the peaceful uses of nuclear energy and the obligation of all non-nuclear-weapon states parties to the NPT to accept the application of safeguards on all source or special fissionable material in all peaceful nuclear activities, all but 27 of the NNWS party to the NPT have brought into force a comprehensive safeguards agreement with the IAEA.[90] A large number of states are engaged in adopting, revising or updating their national legislation in the subject area to incorporate the principles of nuclear law promoted by the IAEA[91] as well as improved standards and practices developed under IAEA auspices. IAEA safety standards may have already been incorporated nationally in order to meet eligibility requirements for IAEA technical assistance. The starting point in considering what legislation may be necessary would be to carry out a complete assessment of the existing national regulatory framework, together with all current and anticipated nuclear programmes.

The scrutiny of the NWFZ treaty, together with existing national legislation, will identify whether any gaps exist. Arguably, until the Nuclear Weapons Convention[92] is concluded, creating the

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87. The reports submitted by states to comply with the resolution are available in a database on the webpage of the 1540 Committee www.un.org/sc/1540/ and are discussed in the Report of the Committee established pursuant to Resolution 1540, UN Document S/2008/493, dated 20 July 2008.

88. Law of Mongolia on its nuclear-weapon-free status, adopted on 3 February 2000, published in UN Document A/55/56, dated 29 February 2000.

89. New Zealand Nuclear Free Zone, Disarmament, and Arms Control Act 1987. Available at: www.legislation.govt.nz/act/public/1987/0086/latest/DLM115116.html.

90. Status available at www.iaea.org/Publications/Factsheets/English/nptstatus_overview.html.

91. Namely, the principles of (a) safety (strict technical standards); (b) security (encompassing physical protection, emergency preparedness and response, transport, safeguards, import/export controls); (c) responsibility (strict liability); (d) permission (licensing and permits); (e) continuous control (monitoring and inspections); (f) compensation; (g) sustainable development; (h) compliance; (i) independence (a regulatory body free from interference); (j) transparency; and (k) international co-operation (safety, reporting incidents, security and crime prevention, treaty compliance, harmonisation and development of standards). See further, Stoiber, C., Baer, A., Pelzer, N., Tonhauser, W., *Handbook on Nuclear Law*, IAEA, 2003.

92. Long promoted by NGOs and annually by the UNGA in its annual resolutions on follow-up to the International Court of Justice Advisory Opinion on the legality of the threat or use of nuclear weapons,

global legal basis for banning nuclear weapons categorically, the NWFZ treaty is the most comprehensive instrument in existence in the subject area. In considering the elements, it should be borne in mind that the norms established by the NWFZ treaties overlap with other instruments in many cases, as well as with international standards and guidelines, some of which are more recent than the NWFZ treaties themselves.

The multiplicity of instruments and overlapping obligations can make the process of developing national implementing legislation for the NWFZ treaty either straightforward or complex. This depends on the extent to which the state party concerned has already incorporated the pre-existing norms into national legislation. If national legislation is already comprehensive, there may be very little legislation to develop beyond giving formal recognition to the international organisation or body created by the NWFZ treaty and expanding the mandate of the existing national nuclear regulatory agency to serve as focal point. If national legislation is not comprehensive, a dedicated effort may be needed to fully develop the legislative and regulatory framework and administrative arrangements necessary.

Generally, depending upon which NWFZ treaty is being implemented, the elements which would need to be covered are the following: purpose of the law; definitions; the status of the NWFZ zone; prohibitions and penalties, including for attempts or assistance with or participation in the crime; application of the law to acts committed abroad by the state's nationals; prevention of proliferation through physical protection of nuclear materials; nuclear safety; radioactive waste management; liability; establishment of the national regulatory authority; functions, duties and enforcement powers of the national authority; licensing and permits; import/export controls; state system for accountancy and controls; reporting; notifications; confidentiality; verification (application of safeguards agreement and facilitation of international inspections); destruction; permission for "visits"; international co-operation and legal assistance; privileges and immunities; promotion of nuclear energy for peaceful uses;[93] and reference to or amendments of other legislative acts (e.g. penal code, customs code, environment, mining, counterterrorism) and finally the authority to issue regulations.

In some cases the norms have evolved since the NWFZ treaty text was concluded through the development and adoption of more recent instruments. Principally this would be the 1980 Convention on the Physical Protection of Nuclear Material (CPPNM), 1996 CTBT, 1997 Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, 1998 International Convention for the Suppression of Terrorist Bombings, 1999 International Convention for the Suppression of the Financing of Terrorism, 2004 United Nations Security Council Resolution 1540, 2005 Amendment to the CPPNM and the 2005 Convention for the Suppression of Acts of Nuclear Terrorism.

Furthermore, the IAEA is in a continuous process of evaluating and updating standards, guidance and recommendations, a large part of which would be relevant to effective legislation and implementation of the NWFZ treaties. In order to incorporate the highest standards of security and maintain effective physical protection, the legislative and regulatory framework for implementation would need to be kept up-to-date to reflect developments in the IAEA.

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the draft text of the Nuclear Weapons Convention was submitted to the UNGA by Costa Rica in 1997 and an updated version to the 2007 Preparatory Committee meeting for the 2010 NPT Review Conference (NPT/CONF.2010/PC.1/WP.17) and to the UNGA (A/62/50).

93. However, the regulatory authority responsible for safety, security and compliance issues should be independent from the entity(ies) involved in the development or promotion of nuclear energy.

6. Conclusion

The negotiation and conclusion of NWFZ treaties constitute a concerted effort by states in the respective regions to create a common security structure and to contribute to nuclear non-proliferation, disarmament and environmental protection.

In regions where some states are not party to the NPT, the establishment of a NWFZ can serve as the first step towards integrating those states into the NPT. This has been demonstrated by both the Treaty of Tlatelolco and the Treaty of Pelindaba. Mongolia's self-declaration as a single-state NWFZ in 1992 achieved international recognition and inspired the establishment of the Central Asia NWFZ. When declaring its security assurances for the Mongolian zone, the Russian Federation suggested that the zone would serve as a good model for North East Asia and beyond.[94] Although they lack international legal status, thousands of cities, towns and municipalities have declared themselves to be NWFZ. Japan has 2 300 such cities and 10 million people in the United States are living in such zones.[95] Such zones generate visible public support for the concept to which voters can bring pressure for government action.

The Treaty of Pelindaba, with just one ratification remaining to bring it into force (which is likely to occur by the time this article is published), and the entry into force of the Treaty of Semipalatinsk on 21 March 2009 may be indicative of increasing momentum and political willingness to achieve concrete progress towards nuclear disarmament. The number of positive statements made in New York during the third preparatory meeting for the 2010 NPT Review Conference from 4 to 15 May 2009 would certainly tend to reflect that.[96]

The establishment of the zone is a process and the declaration of the zone is only the first step. Giving meaning to the NWFZ concept at the national level in terms of implementation and enforcement poses the greatest challenge, and it must be continuous in order to maintain its viability.

The world is shifting, the climate change discussions and volatility of the energy market has captured the attention of all governments large and small. There is a nuclear energy renaissance. The consequence will be a significantly larger number of nuclear-capable states and eventually a monumental amount of nuclear material on earth to be controlled. New uranium prospection and exploration activities have commenced in dozens of countries.[97] Many, even most of those countries lack resources and are already challenged by the economics in human and financial terms of establishing the necessary structure and legislation to cope with treaties in all subject areas. U.S. President Obama's recent announcement of a new international effort to secure all vulnerable nuclear materials around the world within four years is ambitious and underscores the immediacy the threat must actually have. Nevertheless, physical protection is just one element in the equation and it must be accompanied by legislation in tandem. The removal of safe havens is imperative and NWFZs are an important way of meeting that imperative.

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94. Report of the Secretary-General on Mongolia's international security and nuclear-weapon-free status, UN Document A/63/122, dated 14 July 2008, paragraph 5(b).

95. Transnational Institute, Concept paper submitted to the International Seminar on Nuclear-Weapon-Free Zones: Crucial Steps towards a Nuclear-free World, Uppsala, Sweden, 1-4 September 2000, www.tni.org/detail_page.phtml?page=acts_uppsala&print_format=Y.

96. See the daily reports, *NPT News in Review,* www.reachingcriticalwill.org.

97. Wise Uranium Project, New Uranium Mining Projects, www.wise-uranium.org.

The Decommissioning of Asse II – Burden of the Past in the Federal Republic of Germany

*by Hanns Näser**

Asse II, a salt mine in the salt formation of the Upper Permian near Wolfenbüttel, has been the subject of heated debates on environmental policy and law in the Federal Republic of Germany for some time. Until 1995, Asse II was used as a trial facility for the development of techniques for the final disposal of low and intermediate level radioactive waste. Potash and salt rock were produced in this facility from 1909 and 1964 and, after termination of the salt production, radioactive waste was finally stored there between 1967 and 1978.

Since 1988, brine intrusions in different areas of the facility have been detected with the inflow rate increasing substantially since 1991. These brine intrusions are NaCl-saturated brines. The original geochemical balance in the area of the southern flank of the mountain was disturbed due to activity in more than one hundred mines and a deformation process started. As a result, paths for the brine intrusions evolved.[1] In order to counteract the deformation process, residual salts from the former potash mine Ronnenberg near Hannover have been deposited in Asse II[2] since 1995. Since that time, preparation of the procedures for the decommissioning and final closure of Asse II has been taking place.

Asse II became an important topic of public discussion after it came to light in mid-2008 that contaminated brines, which partly exceeded the exemption levels for caesium 137 and tritium, had been occurring deep in the mines since 2006. These events, in particular the delay in getting information to the public, have led to a change in the operational management of Asse II. Furthermore,

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* Hanns Näser is a retired senior officer of the Federal Office for Radiation Protection and former Head of Legal Affairs of the GNS Gesellschaft für Nuklear-Service mbH. He manages the unit Final Storage and Approvals at the GNS. The author alone is responsible for the facts and opinions expressed in this article.

1. Bundestagsdrucksache 16/11477, Attachment "Salzlösungszutritte auf der Schachtanlage Asse", pp. 83 *et seq.*, pp. 86 *et seq.*

2. Hermann/Röthemeyer, "Langfristig sichere Deponien", 1998, p. 355.

an amendment to the Atomic Energy Act[3] which addresses the decommissioning of Asse II has been enacted recently.[4]

The following discussion provides a general overview on final storage facilities as well as on the significance of Asse II in comparison with other final storage projects in Germany. This is followed by details of the final storage in Asse II and its closure. Related legal questions, together with the above mentioned revision of the law, will also be examined.

1. Overview on final disposal projects in Germany

For a long time, Germany has been pursuing four projects related to the final storage of radioactive waste in deep geological formations, namely Gorleben, Konrad, Morsleben and Asse.[5] The three final storage projects Gorleben, Morsleben and Asse are operated in salt rock formations while the project Konrad is in an abandoned former iron ore deposit over which is superimposed, towards the biosphere, several hundred metres of vast layers of clay rock.

These four final storage projects are in completely different phases: Gorleben, designated in particular for heat-generating waste, has been in the exploration phase since 1979; Konrad, designated for waste with only negligible heat-generation, is currently being converted and is therefore in the construction phase;[6] Morsleben, intended for low level waste, was in operation until 1997 and is to be finally backfilled after the licensing procedure for its decommissioning has been completed; and at Asse, in operation since 1978 for low and intermediate level waste, a backfilling concept is presently being developed.

The Asse project in the old Federal Republic of Germany and the Morsleben project in the former German Democratic Republic (GDR) were put into operation in 1967 and 1978 respectively, long before reunification of the two German states. From 1965 to 1995, the mine Asse II had served as a research mine for the development of final storage techniques. In the years 1967 to 1978, a total of about 125 000 packages with low and intermediate level waste had been put into storage for research purposes, with a view to their final disposal.

The Morsleben repository was successively approved by the National Board for Atomic Safety and Radiation Protection[7] on the basis of the nuclear energy law of the former GDR: in 1978 it was approved on a trial basis, in 1981 for a limited time and in 1986 for continuous operation. It was operated by a publicly-owned state enterprise as a central repository for low and intermediate level waste. On 1 July 1990, approval of its licence devolved to the National Board for Atomic Safety and Radiation Protection and thereafter, with the reunification of the two German states on 3 October 1990, to the Federal Office for Radiation Protection (*Bundesamt für Strahlenschutz*, hereinafter "BfS"),

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3. Gesetz über die friedliche Verwendung der Kernenergie und den Schutz gegen ihre Gefahren (Atomgesetz) of 23 December 1959, as amended and promulgated on 15 July 1985, last amendment by the Act of 29 August 2008; Bundesgesetzblatt 2008, Part I, p. 1793, reproduced in the Supplement to *Nuclear Law Bulletin* No. 70.

4. "Zehntes Gesetz zur Änderung des Atomgesetzes", 17 March 2009, Bundesgesetzblatt 2009 Part I, p. 556.

5. Hermann/Röthemeyer, *op. cit.*, pp. 352 *et seq.*

6. See on the status on Konrad: Kühne, G., "Judicial Progress in Germany's Nuclear Waste Disposal Policy, The Konrad Repository Decisions of 26 March 2007" in *Nuclear Law Bulletin* No. 80, p. 9.

7. Staatliches Amt für Atomsicherheit und Strahlenschutz.

albeit for a limited time. Since then, the Morsleben repository has been a facility of the federation in accordance with Section 9a, paragraph 3 of the Atomic Energy Act (AEA). Approximately 37 000 m^3 of low level waste and 6 600 enclosed radiation sources were stored there until September 1998 at which time the storage of radioactive waste was suspended on the basis of a decision of the Higher Administrative Court of Magdeburg.

With the amendment of the AEA in 2002, the transitional provision for repositories licensed according to GDR law was repealed.[8] Accordingly, the old GDR licences for the Morsleben repository remain in full force and effect except that the final storage of further radioactive waste is forbidden by law.[9]

The Asse project was already in operation when the basic provisions for final storage of radioactive waste entered into force in the Federal Republic of Germany, the so called "Disposal Amendment" of 30 August 1976.[10] Morsleben had also been operating on the basis of former GDR law and was therefore not subject to the Disposal Amendment. Gorleben and Konrad, however, were only started after the enactment of the Disposal Amendment and on the basis of the detailed provisions of the AEA with respect to final storage (in particular Sections 9a and 9b of the AEA). Accordingly, the Disposal Amendment to the AEA is the dividing line between the old projects Morsleben and Asse and the new projects Konrad and Gorleben. This dividing line marks a break between the final storage projects in Germany, not only with respect to time, but with respect to contents, since there are considerable differences between the safety philosophies of the two pairs of projects. One pivotal difference is that the Disposal Amendment requires the furnishing of proof that long-term safety has been developed and implemented.

2. The legal situation until the Disposal Amendment

The original version of the AEA of 1959[11] contained only rudimentary provisions with respect to the disposal of radioactive waste; in fact final storage of radioactive waste was not explicitly provided for. However, the act referred to "disposal of radioactive waste" which includes its final storage. The disposal of radioactive substances was defined as a case of "handling" of radioactive substances (Section 11, paragraph 1, No. 1 of the AEA), and authorisation was given to regulate the disposal of radioactive waste by ordinances (Section 12 of the AEA). The federal government made use of this authorisation in 1960 with the enactment of the first Radiation Protection Ordinance.[12] Pursuant to the 1960 Radiation Protection Ordinance,[13] the disposal of waste not containing nuclear fuel required a handling licence.

These rudimentary provisions with respect to disposal have gradually developed and been implemented with the expansion of the peaceful utilisation of nuclear energy. However, in contrast to the Disposal Amendment of 1976, these provisions did not provide for a closed delivery system for radioactive waste, although first approaches towards a disposal system were recognisable. According to Section 42 of the 1960 Radiation Protection Ordinance, radioactive waste was to be delivered for

8. Pursuant to Section 57a, paragraph 1, No. 1 of the AEA in connection with Section 4 of the AEA.

9. Kloepfer, Umweltrecht, 3rd edition, 2004, § 15, margin note 127.

10. Viertes Gesetz zur Änderung des Atomgesetzes (Bundesgesetzblatt 1976 Part I, p. 2573).

11. Bundesgesetzblatt 1959 Part I, p. 814.

12. Erste Strahlenschutzverordnung, Bundesgesetzblatt 1960 Part I, p. 430.

13. Sections 3, paragraph 1 and Section 42, paragraph 1.

interim storage to a collecting facility at state level (*Landessammelstelle*), although other possibilities were not excluded.

3. The Disposal Amendment to the AEA

With the 1976 Disposal Amendment to the AEA, detailed provisions with respect to the disposal of radioactive waste, in particular with respect to its final storage, were introduced in the Federal Republic of Germany. These provisions in essence continue to apply today.

a) Final storage as state responsibility

According to Section 9a, paragraph 3 of the AEA, final storage of radioactive waste falls under the responsibility of the federation which is required to establish repositories for that waste. The construction of repositories is to be carried out by the BfS.[14] An important reason for assigning this responsibility to the state was the assessment, at that time, that the final storage question could only be resolved from a sovereign and national perspective. Today, this assessment is still considered valid.

In order to utilise the know-how existing in the private sector for these tasks, the BfS is permitted to avail itself of the services of third parties. One such third party is the "Deutsche Gesellschaft zum Bau und Betrieb von Endlagern für Abfallstoffe" (DBE) which supports the BfS at the three final storage projects Gorleben, Konrad and Morsleben.

As a rule, all radioactive waste must be delivered, as appropriate, to a repository of the federation after interim storage or delivery to a state collecting facility.[15] The purpose of this rule is to establish a comprehensive system for the delivery of radioactive waste which is legally binding upon all persons responsible for the waste.

b) The plan approval according to nuclear law

The construction and operation of a repository are subject to prior approval, called a nuclear plan approval, according to Section 9b, paragraph 1 of the AEA.

Nuclear plan approval constitutes the official adoption of a plan for a project which is relevant for a region. It also replaces approvals that would be required according to other specialised sectors, such as building codes or environmental protection legislation, thereby avoiding an "approval competition" between different authorities while respecting the legal requirements of the respective sectors.[16] One exception to this rule is that specialised approvals required under mining laws must still be obtained.

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14. Section 9a, paragraph 3 AEA in connection with Section 23, paragraph 1, No. 2 of the AEA. The BfS is a higher federal authority (*Bundesoberbehörde*).

15. Sections 76, paragraph 4 and 6, 78 of the Radiation Protection Ordinance.

16. Kloepfer, *op. cit.*, § 15, margin note 134; Näser in: "Endlagerung radioaktiver Abfälle", Röthemeier (ed.), pp. 10 *et seq.*, 19 *et seq.*

c) Precautions according to state of the art science and technology

A pivotal requirement for nuclear plan approval is that necessary precautions be taken against damage (*Schadensvorsorge*) according to state of the art science and technology.[17] This requirement applies to all nuclear facilities and installations and serves as the best possible protection for people and the environment against the harmful effects of ionising radiation.

The term "precautions against damage" comprises "protection against danger", (*Gefahrenabwehr*) "suspected danger" (*Gefahrenverdacht*) and "protection against risks" (*Risikovorsorge*). The term "danger" originates in conventional public law and requires that there be sufficient probability of the occurrence of damage in the foreseeable future. In the case of "suspected danger" there is a remote possibility that damage will occur, but there is not sufficient probability for damage to occur. "Protection against risks" relates to risks where, according to the present state of knowledge, the possibility of a damaging event cannot be ruled out, and thus comprises risks due to deficiencies in technical information relating to safety requirements. If uncertainties exist with respect to the relation of cause and effect, nuclear plan approval may not be granted until all risks which are under human control can virtually be excluded. This is known as "residual risk" (*Restrisiko*).[18]

As a result, "protection against damage" not only relates to protective measures based on existing engineering know-how, but also to measures which are considered on the basis of theoretical considerations and calculations.

In order to take the necessary precautions, a distinction needs to be made between the risks that are allowed. It is necessary to consider whether they are risks resulting from proper operation or risks resulting from breakdown or accident. The risks resulting from breakdown or accident differ from the risks from proper operation insofar as they present uncertain events. The occurrence of such an event means that either a deterministic or probabilistic prognosis is possible. The safety requirements are concretised by dose limits for proper operation and for breakdowns. Should the calculations, which serve as proof for this purpose, lead to doses underneath the determined dose limits, then such doses have to be attributed to the "residual risk".

d) Long-term safety

For the final storage of radioactive waste, proof of long-term safety is required. Long-term safety, i.e. the protection of people and the environment over the long-term against the harmful effects of ionising radiation in connection with the final storage of radioactive waste, is not expressly regulated in the law.

Long-term safety derives from Article 20a of the German Federal Constitution which was introduced in 1994.[19] By this constitutional norm, protection of the environment was incorporated as a national objective, with the aim of protecting future generations.

Significant for long-term safety from a constitutional law standpoint is the so called theory of the "objective function of basic rights" ("Lehre von der objektiven Funktion der Grundrechte") according to which basic rights do not only protect the holder of those rights but they contain an

17. Section 9b, paragraph 4, sentence 1 AEA in connection with Section 7, paragraph 2, No. 3 AEA.

18. Näser/Oberpottkamp in: "Langfristig sichere Deponien", Hermann/Röthemeier (ed.), pp. 113, 125, with further references.

19. Law of 17 October 1994 (Bundesgesetzblatt 1994 Part I, p. 3146).

objective system of values which binds all activities of the state,[20] resulting in obligations imposed upon legislators and other public entities.

With respect to the obligation to protect future generations, there is a general consensus that necessary "precautions against damage" according to state of the art science and technology include long-term safety.[21]

In order to more clearly define the parameters and the necessary "precautions against damage" according to state of the art science and technology, the Federal Minister of the Interior (who was responsible for nuclear safety at that time) established safety criteria in 1983. The limits in these safety criteria do not completely exclude the release of radionuclides into the biosphere during the time following the decommissioning of the repository.[22]

When providing proof of long-term safety, a differentiation must be made between the probable (regular) development of geological, geotechnical and technical barriers and the so called accident scenarios (*Störfallszenarien*) which characterise less probable or improbable developments. Less probable or improbable developments are determined during the analysis of these scenarios. The specified safety objectives (doses and risk indicators) must be respected for probable as well as for less probable developments, but not for improbable developments as it is assumed that several independent events would not occur in parallel.

The safety criteria for the final storage of high level radioactive waste are currently being revised by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU)[23] which has been the responsible authority for nuclear safety since 1986. With respect to repositories for high level waste, a period of up to 1 million years is being considered. Still in dispute is the safety objective of the radiation protection law, and an indicative limit of under one mSv per year or a risk of 10^{-4} per year for probable scenarios is currently being discussed (draft of the safety requirements at www.bmu.de).

With respect to the Konrad project, evidence concerning long-term safety was furnished on the basis of the safety criteria existing in 1983. For the Gorleben project, a comprehensive exploration programme was executed both above and below ground from 1979 to 2000 following which a moratorium suspending below ground exploration was adopted with effect until October 2010 at the latest. After the moratorium has been lifted and exploration has continued, comprehensive proof of long-term safety is to be furnished on the basis of the results of that exploration.

Based on the legal provisions in existence before enactment of the Disposal Amendment and under GDR law, no proof of long-term safety was required before construction and operation of the Morsleben and Asse projects. At the time their approval was granted, it was assumed that final storage in abandoned salt mines would entail significant safety benefits, as opposed to disposal above ground or even dumping at sea, and would, therefore, be justified. Accordingly, in contrast to today's safety philosophy for final storage in salt rock, abandoned salt mines were chosen for final storage of radioactive waste. However, due to the too short distances between individual cavities and water-

20. Federal Constitutional Court (*Bundesverfassungsgericht*), BVerfGE 5, 204; 21, 372.

21. On the legal basis of the long-term safety more detailed Näser/Oberpottkamp, *op. cit.*, p. 132 *et seq.*

22. "Sicherheitskriterien für die Endlagerung radioaktiver Abfälle in einem Bergwerk", Bundesanzeiger, Volume 35, No. 2, 5 January 1983, p. 45.

23. Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit (BMU).

bearing rock layers, continuous isolation of the waste from the surrounding rock and overburden cannot be guaranteed. This is partly due to the fact that the waste cavities are only a few metres from the water-bearing rock layers and, thus, from the biosphere. In addition, due to the high degree of penetration, measures to stabilise the salt rock need to be taken.[24]

According to today's safety philosophy, the final storage of radioactive waste in salt rock (previously untreated salt domes) is still required but now hundreds of metres are envisaged to exist between the storage area in the salt and the biosphere. The result is a completely new and fundamentally different view of the matter,[25] leading to the conclusion that the Asse and Morsleben projects can both be considered as burdens of the past. In terms of safety technology, there is no comparison between these projects and the Gorleben and Konrad projects.

4. History of the Asse

a) Acquisition of the Asse for the storage of radioactive waste

The Asse is a mountain range near Wolfenbüttel under which a salt deposit of the Upper Permian is located. This salt deposit evolved, as with other salt deposits in northern and middle Germany, about 240 million years ago from evaporation from the Upper Permian Sea. This was how brines became enclosed into the salt rock.[26]

Following a flood at the potash mine Asse I, the sinking of the new shaft Asse II began immediately. In 1909, the exploitation of potash began and, starting from about 1916, salt was exploited. The exploitation of potash finished in 1925 with salt rock continuing to be produced until 1964.[27]

In 1963, it was concluded that the storage of radioactive waste in salt was a promising method in Germany, and the GSF[28] acquired the mine Asse from the former operator, on behalf of the federal government, for the execution of exploratory works for the final storage of radioactive waste. The overall responsibility, as well as the financing of the Asse project, rested with the former Federal Research Ministry which is known today as the Federal Ministry of Education and Research.

b) The storage of radioactive waste

Within the framework of a long-term trial programme small amounts of low level radioactive waste, and later on low and intermediate level waste, were stored by way of large-scale trials and optimisation. The programme comprised different storage techniques, namely stacking upright,

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24. Hermann/Röthemeyer, *op. cit.*, p. 355, p. 359.

25. Bundestagsdrucksache, Attachment "Salzlösungszutritt zur Schachtanlage Asse", *op. cit.*, p. 83 *et seq.*, p. 91, with further significant differences between the final storage projects Asse and Gorleben.

26. Bundestagsdrucksache, Attachment "Salzlösungszutritt zur Schachtanlage Asse", *op. cit.*, p. 83.

27. Bundestagsdrucksache, Attachment "Salzlösungszutritt zur Schachtanlage Asse", *op. cit.*, pp. 83 *et seq*.

28. Gesellschaft für Strahlenforschung GmbH, later: Forschungszentrum für Umwelt und Gesundheit GmbH, today: Helmholtz-Zentrum München – Deutsches Forschungszentrum für Gesundheit und Umwelt GmbH – hereinafter referred to as "operator".

stacking reclined and dipping, together with the radiation protection supervision of the operational staff and the mine including its surrounding area.[29]

Between 1967 and 1978, a total of 125 787 packages with radioactive waste were stored in the Asse II of which 1 293 contained intermediate level waste and 124 494 contained low level waste.

Up to July 1971, about 9 325 packages of low level waste were stored within the first four operations; the vast majority was stored after that date when systematic acceptance criteria and conditions for the documentation were applicable.

Only about 20% of the waste packages (exclusively low level waste with about 3% of the total activity) originate from the operation of nuclear power plants. In contrast, about 60% of the waste packages (with about 90% of the total activity) originate from the science and engineering research institution (Forschungszentrum) Karlsruhe. In terms of storage, ownership of the waste is passed to the operator.

The storage of radioactive waste in the Asse II took place in 11 chambers at the 750 metre level and one chamber at the 725 metre level. Intermediate level waste was stored at the 511 metre level (chamber 8a) starting from 1972. The storage chambers were backfilled with gravelled salt with the exception of one chamber used for demonstration purposes and one chamber used for intermediate level waste. The waste was intended to be firmly encased within the mountain by rock pressure (convergence of the chamber openings by rock creep). High level waste, e.g. vitrified residues or fuel elements were not stored in the Asse II.

c) The backfilling of the southern flank until 1989

A rock monitoring programme, in operation since 1966, led to the conclusion that the long-term stability of the mine could be improved significantly by backfilling the old cavities. Accordingly, from 1980 to 1989 about 850 000 m^3 of salt rock originating from new infrastructural facilities and research areas were deposited in the chambers of the southern flank.[30]

d) The further backfilling due to brine intrusions

From 1906 to 1988, 29 brine intrusions occurred in the Asse II which either ran dry or were sealed and are of no importance for operational safety today.

Since 1988, a total of 32 active brine intrusions have been detected. The main inflow from the southern flank originates with the overburden and amounts to about 11.8 m^3 per day which are collected on different layers.[31] A direct inflow of these liquids into the storage chambers of the radioactive waste has not been verified so far. Since these inflowing fluids are saturated with salt rock, they cannot damage the salt dome. They can, however, absorb additional potashes, insofar as they reach these areas of the salt dome, and this further weakens the stability of the mine. Even though the major inflow in the southern flank has remained consistent for a long time, a sudden increase of inflow

29. Breest/Pfaffelhuber, in: "Atomwirtschaft", 1977, p. 641.

30. Annual Report of the GSF 1996, p. 73.

31. "Statusbericht des Niedersächsischen Ministeriums für Umwelt und Klimaschutz über die Schachtanlage Asse II", p. 11 *et seq.*, *op. cit.*

rates cannot be ruled out. This is because the flow paths of the brines are spread out and not yet completely reached.[32]

Due to increased rock deformations caused by the high degree of penetration of the Asse II, and the intrusion of salt solutions between 1991 and 1993, an assessment of hazards was performed by the mining authority of Lower Saxony. As a result, the quick backfilling with rock packing, in particular of the southern flank, was advised whereupon the operator developed a closure concept which was an attempt to stabilise the supporting system with gravelled salt. In parallel with the backfilling of the cavities, a strategy for the long-term secure closing of the facility was developed, taking into consideration the naturally occurring processes.

Between 1995 and 2004, about 2.1 million t (about 1.75 million m³) of packing material were filled in. This package material originates from residual salts of the former potash mine Ronnenberg near Hannover. The filling in was carried out layer by layer from the bottom to the top. Purpose of the filling measures was in particular to support the pillars between the mining chambers and, thereby, to limit the further deformations of the rock[33] and to prevent an increase of the brine intrusions. The filling of the mines in the southern flank is to a large extent completed.

5. The present problems of the Asse

In June 2008, brine intrusions with an increased caesium-137-concentration above the exemption values of Section 29 of the Radiation Protection Ordinance occurred at the 750 metre layer of the trial repository Asse and it came to the public's notice. These contaminated brines originated from the radioactive waste stored in one storage chamber and from accidents that had taken place during storing operations. The possibility that brines from the overlying rock of the southern flank permeated into the waste chambers at the 700 metre layer cannot be ruled out.[34] Since mid-2006, contaminated brines have been taken into the deeper parts of the mine down to a depth of 950 metres.

From what is known today, contaminated brines which exceed the exemption values occurred for the first time in 1988. However, they were only discovered in 1995. Today, the inflow amounts to about one 1 m^3 per month. In total 77 m^3 of these brines were taken from the 750 metre layer to the 950 metre layer.

To summarise, there are two brine sources which are strictly distinguished. There are those which are not considered contaminated under the exemption values of the Radiation Protection Ordinance, and they would only be exposed to contamination from tritium which is in the air of the mine. Then, there are those which are considered contaminated because they exceed the exemption values of the Radiation Protection Ordinance. The collected saline brines below the exemption values were released to third parties as non-radioactive materials after approval of the mining authorities. The contaminated saline brines remained in the Asse. After the occurrence of contaminated brines in the Asse became public, the transfer of these brines into the deeper parts of the mine, the release of uncontaminated brines and the backfilling of the mining chambers were interrupted and remain so to this day.

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32. BfS press release 007 of 30 January 2009.

33. Annual Report of the GSF 1996, p. 75.

34. Press release 59/2008 of the Ministry for Environment and Climate Protection of Lower Saxony (www.umwelt.niedersachsen.de).

A working group "Optionenvergleich" (Comparison of Options), which was established in November 2007, deals with different decommissioning concepts and also with the question of the retrievability of radioactive waste. According to initial evaluations, retrieval of exclusively intermediate level waste is not advisable from the perspective of long-term safety. The final report is not expected before the end of 2009.[35]

6. Legal aspects with respect to the storage and backfilling of the Asse

a) Atomic Energy and Radiation Protection Law

At the beginning of the 1960s, the decision to finally store radioactive waste in deep geological formations, preferably in salt domes, was reached in the Federal Republic of Germany. The Asse II served to further this development by way of a comprehensive research programme.[36]

Storage on the basis of handling licences in accordance with the 1965 Radiation Protection Ordinance

From 1967 until 1978, the storage of radioactive waste in the Asse II was not carried out on the basis of a nuclear plan approval under Section 9b, paragraph 1 of the AEA. The plan approval procedure was only introduced with the 1976 Disposal Amendment, shortly before the storage of radioactive waste in the Asse II was completed in 1978.

The storage of radioactive waste in the Asse II was carried out on the basis of handling licences under Section 3, paragraph 1 of the 1965 Radiation Protection Ordinance. Pursuant to this provision, the handling of radioactive waste required a licence. The term "handling" includes the disposal of radioactive waste.[37] Pursuant to Section 42, paragraph 1 of the 1965 Radiation Protection Ordinance, radioactive waste had to be delivered to collecting facilities determined by the law of the federal states or had to be disposed of in some other approved way in accordance with a licence.

According to the prevailing opinion of professional literature at that time, the term "disposal" covered the final disposal of radioactive waste which was also referred to as final custody or final storage of radioactive waste.[38] Disposal in a mine was considered as one possible method of final disposal. Final disposal related not only to the placement of the radioactive waste in a mine, but also to its course until the decay of the radioactivity to a non-hazardous level.[39]

It was only the backfilling of the storage chambers which was subject to final disposal and not the final backfilling of a mine. The final backfilling of a mine was only developed after the enactment of the Disposal Amendment. The purpose of final storage of radioactive waste, which was introduced with the Disposal Amendment, was the safe closure of the waste from the biosphere based on proof of

35. BMU press release No. 047/09 of 13 February 2009.

36. Breest/Pfaffelhuber, *op. cit.*, p. 641.

37. According to the enabling provision, Section 11, paragraph 1 No. 1 of the 1959 AEA and according to Section 1, paragraph 1 No. 1 of the 1965 Radiation Protection Ordinance.

38. Pelzer, Norbert, "Zur rechtlichen Problematik der Beseitigung radioaktiver Abfälle", in: "Energiewirtschaftliche Tagesfragen", 1975, pp. 102 *et seq*.

39. Prasse, "Rechtsprobleme der unterirdischen Endlagerung radioaktiver Abfälle", 1974, pp. 66 *et seq.*, in particular p. 71.

long-term safety. In the 1983 safety requirements for the final storage of radioactive waste in a mine,[40] the complete backfilling of all cavities, including mine shafts, had been required. In addition to complete closure, a requirement of proof of long-term safety was introduced. This is something which was not required for the disposal of radioactive waste according to previous laws.

Under the former law, the inundation of the mine, or rather, the brine intrusions had been considered as the maximum credible accident. In this regard it was assumed that, even in the case of a complete dissolution of the radioactive waste, the activity concentration in the groundwater would still be below the value required for the acceptable quality of drinking water.[41] However, a document on the licensing procedures for a disposal licence according to radiation protection law which documents such a calculation is not known.

The storage of radioactive waste was only licensed as trial storage. This wording, however, referred only to the fact that the storage activities were part of a research programme of the operator of Asse II. With the experience of storing radioactive waste in salt at Asse II came the scientific findings. The term "trial storage", did not mean that the radioactive waste was only to be stored experimentally or provisionally in the Asse II. Rather, it was clear from the beginning that the storage was to be carried out as final storage. This is obvious, not only from the applications of the operator which mention the final storage of radioactive waste in the Asse II, but also from the correspondence of the licensing authority. One such letter refers to the exceptional character of the storage. The storage of radioactive waste was, however, limited in time by these handling licences until 31 December 1978. Accordingly, storage beyond this period of time was not permissible.

The handling licences that were granted pursuant to the 1965 Radiation Protection Ordinance continued to be effective even after the 1976 Radiation Protection Ordinance came into force. The transitional rule provided that licences for the disposal of other radioactive substances which had been granted on the basis of the 1965 Radiation Protection Ordinance continued to be effective as licences according to the 1976 Radiation Protection Ordinance. Accordingly, the storage of radioactive waste could proceed even after 1977 on the basis of the granted disposal licences until the end of the foreseen time limit, i.e. the end of 1978.

The backfilling of chambers continued after the expiration of that deadline as these were still licensed activities. The time limit referred only to the storage of radioactive waste in the Asse II and not to other activities with respect to the disposal of this waste. However, the originally licensed backfilling measures could not be executed after 31 October 1993 because handling licences which had been granted in accordance with the 1965 Radiation Protection Ordinance became invalid four years after the coming-into-force of the 1989 Radiation Protection Ordinance.

The Asse as an installation according to Section 42, paragraph 1 of the 1965 Radiation Protection Ordinance

The Asse was considered an installation according to Section 42 of the 1965 Radiation Protection Ordinance. This section provided on the one hand for the disposal of radioactive waste by relinquishing it to a collecting facility and on the other hand by the disposal of radioactive waste "otherwise". This "disposal otherwise" required a handling licence according to Section 3 of the 1965 Radiation Protection Ordinance and was non-governmental disposal of radioactive waste which was

40. "Sicherheitskriterien für die Endlagerung radioaktiver Abfälle in einem Bergwerk", *op. cit.*

41. Breest/Pfaffelhuber, *op. cit.*, p. 651.

permitted under the law at that time.[42] The Asse II was not a collecting facility but an installation for "disposal otherwise". The amendment to the Radiation Protection Ordinance of 1976 also provided that radioactive waste was not subject to compulsory relinquishment, when and insofar as the disposal of radioactive substances otherwise was permitted according to Section 3 paragraph 1 of the Radiation Protection Ordinance 1976. However, due to a transitional provision (Section 82 paragraph 1 of the 1976 Radiation Protection Ordinance) disposal licences on the basis of the 1965 Radiation Protection Ordinance were also considered as permitted "disposal otherwise". The Asse II was, therefore, according to the conception of the issuer of the ordinance still an installation for the "disposal otherwise" of radioactive waste. This special installation was not to be continued as a federal repository according to Section 9a, paragraph 3 of the AEA.[43] Accordingly, Asse II was considered as an exception in that it was not obliged to relinquish its radioactive waste as provided for in Section 9a, paragraph 2, sentence 2 of the 1976 AEA. This is supported by the fact that the Disposal Amendment abstained from including a transitional rule for the Asse.[44]

Moreover, the holders of radioactive waste were free to use this installation for the disposal of radioactive waste if they so wished. In the event that they wanted to use the Asse II, contracts were concluded concerning the storage of waste.

The opinion of environmental associations

The opposing view, which was presented in particular by environmental associations, assumed that the exception from the obligation to relinquish radioactive waste did not permit the final storage of radioactive waste outside the public regime of Section 9a, paragraph 3 of the AEA. As a result, the BfS would have been obliged to take over the Asse II directly after the Disposal Amendment entered into force. Consequently, further storage of radioactive waste until the end of 1978 should not have been carried out.

b) Mining law

In addition to the licences that were issued according to nuclear energy and radiation protection law, the storage of radioactive waste and the backfilling of the chambers for the disposal of radioactive waste were carried out only after a licence was obtained under relevant mining law. According to the latter, licences serve to ensure safety with respect to mining technology in connection with the disposal of radioactive waste and related activities.

The licence for the disposal of radioactive waste comprised storage and the backfilling of the storage chambers. Further measures, such as the backfilling and closure of the Asse, were not required under this licence. It was, therefore, in the opinion of the operator and of the mining authorities final disposal and the subsequent backfilling only had to comply with mining law. Accordingly, the placement of residual salts from the potash mine Ronnenberg starting in 1995 was only approved under relevant mining law, i.e. on the basis of the so called overall operating plan (*Rahmenbetriebsplan*).[45]

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42. Bundesratsdrucksache 121/60 of 29 April 1960, reasoning, p. 65 *et seq*.

43. Bundesratsdrucksache 375/76 of 3 June 1976, reasoning p. 51.

44. Likewise the reasoning to the 10th Amendment to the AEA, *op. cit.*, p. 13.

45. Landesamt für Bergbau, Energie und Geologie in Clausthal-Zellerfeld.

This legal assessment with respect to the backfilling of the Asse formed the basis for all actions taken by the operator until the beginning of 2009 when there was a change of operational management. The operator and the competent mining authorities had agreed to this due to differing legal opinions.

In 1997, the operator of Asse filed the overall operating plan "Zukünftige Arbeiten auf der Schachtanlage Asse" (Future works on the Asse mine) with the mining authorities of Lower Saxony. It was approved at the end of 1997. This approval of the overall operating plan related in particular to measures to stabilise cavities by backfilling them with salt materials. It also related to the final closure of further areas of the mine as well as the final closure of the stored radioactive waste including proof of long-term safety. Within the scope of the latter, the intrusion of brine into the mine had been assumed. In order to protect the biosphere against the leaking of radioactive substances, special barriers were designed to obstruct the brine flow. This displacement of fluid was intended to establish a chemical balance with the rocks *in situ* and therefore deemed to lead to an isolation of the waste. At the same time, it ensured a significant delay in the intrusion of radionuclides into the biosphere. In order to implement the backfilling measures, approvals of the special operating plan were necessary on the basis of the approval of the overall operating plan. In addition, the approval of the overall operating plan required the operator to furnish a final operating plan for the final decommissioning of the Asse II.

The final operating plan, including a safety analysis report for the decommissioning of the Asse research mine, was received by the competent mining authority, the state authority for mining, energy and geology[46] on 29 January 2007. It provided that magnesium depots be placed into the storage chambers and barriers to obstruct the flow near the area of the storage chambers and that protective fluids were to be placed into the mine rooms. The operating plan, together with the mining authorities, stipulated that proof of long-term safety, executed in accordance with state of the art science and technology, would be furnished within the scope of the mining law.

c) Legal allocation of long-term safety

The question of whether the supervision provisions of the mining law were sufficient for the closing of Asse II or if an additional nuclear plan approval was necessary for the closure according to Section 9b of the AEA, was the subject of public debate. This directly related to the question of whether and how long-term safety as an instrument of nuclear law is to be implemented procedurally.

The dispute touched on the characterisation of the Asse II as an installation for the disposal of radioactive waste "otherwise" in the terms of Section 42 of the 1965 Radiation Protection Ordinance and Section 47 of the 1976 Radiation Protection Ordinance. This is the view held by the prevailing governmental practice, in particular by the competent mining authorities. The other view is that Asse II is an installation according to Section 9a, paragraph 3 AEA, i.e. an installation of the federation for the disposal of radioactive waste.

The latter opinion was advanced in particular by environmental associations. Their reasoning was that, after the introduction of the disposal regime of the 1976 Disposal Amendment to the AEA, the federation would be exclusively responsible for final storage. Therefore, a state monopoly existed. As such it was felt that the Asse II would need to be closed. A law suit instituted by a neighbour to direct the operator to implement measures with respect to the final closure based on the

46. For details on the overall operating plan according to mining law: Kühne "Obligatorische Rahmenbetriebsplanzulassung im Bergrecht und ihre Wirkungen", in: *Deutsches Verwaltungsblatt* (DVBl.) 2006, p. 662.

aforementioned argument was dismissed by the Higher Administrative Court Lüneburg at the beginning of 2008 for procedural reasons.[47]

The prevailing opinion in administrative practice was that under mining law the final and safe closure of the facility was the sole purpose of the decommissioning measures; however, under radiation protection law, disposal was concluded with the backfilling of the storage chambers.

Both opinions agreed that Asse II was to be closed on the basis of proof of long-term safety which has to consider future generations. On the basis of the arrangement agreed by the former operator of the Asse II and the mining authorities, proof of long-term safety was to be furnished in accordance with state of the art science and technology. This is not a standard of mining law; it is, however, a standard of nuclear law.

For those who demand, or have demanded, the execution of nuclear plan approval in accordance with Section 9b of the AEA for the closure of the Asse II, proof of long-term safety in accordance with state of the art science and technology is self-evident.

The question must be raised as to how the substantive requirements of nuclear law can apply to an approval procedure under mining law. According to mining law, the existing state of technology is the standard for the approval of mining projects, not state of the art science and technology, as is the case in nuclear law.

The application of nuclear law standards, such as state of the art science and technology, in a licensing procedure under mining law could be in conflict with the separation principle. Pursuant to this principle, only the requirements of the special law apply in licensing procedures. Accordingly, in environmental law the level of protection set forth by the relevant special law is the criterion for the permissibility of a project.

An exception to the separation principle under German law is made when the legislator provides for a concentrated effect of approvals, such as in the case of a nuclear plan approval, wherein, during the application procedure of the special law, other fields have to be considered. However, approval procedures according to mining law do not have the described concentrating effect in this context. On the other hand, other special fields and their substantive requirements have to be included and considered in the mining law, when no independent licensing procedure is provided for in these special fields. Section 48, paragraph 2 of the Federal Mining Law[48] provides that applications for licences under mining law can be refused in case of conflict with overriding public interest, these public interests being set forth in such other laws.[49]

If this provision was applicable, long-term safety according to state of the art science and technology as a standard of nuclear law would become important in an approval procedure according to mining law.

The legal problem of the application of Section 48, paragraph 2 of the Federal Mining Law in matters of nuclear law is that pursuant to nuclear law matters of nuclear and radiation protection law are comprehensively subject to approval. Therefore, every handling of a radioactive substance is

47. Press release of the Oberverwaltungsgericht Lüneburg of 14 February 2008.

48. *Bundesberggesetz* (BBergG) of 13 August 1980 (Bundesgesetzblatt Part I, p. 1310) lastly amended by Article 11 of the law of 9 December 2006 (Bundesgesetzblatt Part I, p. 2833).

49. Federal Administrative Court (*Bundesverwaltungsgericht*), Judgement of 14 April 2005, 7 C 26.03, www.bverwg.de.

subject to approval. Consequently, at first glance, matters of nuclear and radiation protection law cannot be included in the approval procedure according to mining law.

At the end, for the closure of the Asse II a formal procedure is to be carried out, i.e. a plan approval procedure. This is because the former operator of the Asse II had changed its original concept for closure after the intrusions of saturated brines and had provided for the placement of a protective fluid within the scope of the closure. The relevant provisions in this context are Sections 52, paragraph 2a and 57a of the BBergG. Such a plan approval procedure requires an environmental assessment and includes the participation of the public during the procedure. Also, with regard to the nuclear plan approval pursuant to Section 9b, paragraph 1 of the AEA for the decommissioning of the Asse, an environmental impact assessment and participation of the public have to be carried out. Procedurally, there are no fundamental differences between these two possible alternatives according to former laws.

The subsequent legal and political developments clarified the outlined dispute with regard to the applicable laws.

7. The new legislation concerning the Asse

Since 1 January 2009, the Asse has been an installation of the federation in accordance with Section 9a, paragraph 1, sentence 3 of the AEA. The operational management has been assigned by the BfS to the Asse Betriebsführungsgesellschaft mbH, a newly founded fully state-owned subsidiary of the federation. Additionally, the assets of the operator, which were necessary for the operation of the Asse, were transferred to the federation. The personnel of the operator were transferred to the new company.[50]

This was preceded by a decision of the federal cabinet to assign the Asse II to the BfS, the federal institution competent and responsible for final storage in Germany after recommendation by the Federal Ministry for Education and Research which was responsible for the Asse in the past. It was also recommended by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.[51] The purpose of this decision was, in particular, to provide legal certainty for the future operational management and the decommissioning of the Asse II.

The change of operator originated from an agreement between the above mentioned federal ministries and the Ministry for Environment and Climate Protection of Lower Saxony which stated that the Asse II should, in the future, be treated as a repository and thereby the operational management should devolve to the BfS.

As a consequence of the change in the operational management it was understood that, for the closure of the Asse II, a nuclear plan approval procedure according to Section 9b AEA needed to take place. Thus, an amendment to the AEA was agreed. This has now been implemented by the legislator with the 10th Amendment to the AEA. A new Section 57b was introduced which relates to the operation and decommissioning of the Asse II. Accordingly, the provisions which apply to the installations of the federation pursuant to Section 9a, paragraph 3 of the AEA also apply to the decommissioning of the Asse II.

50. BfS press release 01/09 of 5 January 2009.

51. Joint press release of the Federal Ministry for Education and Research and the Federal Ministry for Environment, Nature Conservation and Reactor Safety, 5 November 2008, No. 191/2008, www.bmbf.de.

As a result, the Asse II has been legally put on a par with respect to the decommissioning of installations of the federation for the final storage of radioactive waste. However, it does not state that Asse II is a repository of the federation. For the further operation of the Asse II, and until its decommissioning, no plan approval according to Section 9b of the AEA is necessary. The exclusion of a plan approval for the further operation of Asse II takes into account the former qualification of Asse II as a research facility. Furthermore, had a plan approval been required, the decommissioning would have been substantially delayed and this would not have been justifiable for safety reasons.[52]

Unlike the further operation, the decommissioning, i.e. the final closure of the Asse II, requires a nuclear plan approval. Until the decision regarding the plan approval has become final, the handling of radioactive waste requires an approval in accordance with the provisions of the AEA or the Radiation Protection Ordinance. The BfS is also responsible for the nuclear supervision of the Asse II.

Accordingly, the closure of the Asse II will only be possible when a nuclear plan approval for its decommissioning has been granted. This requires a comprehensive nuclear plan approval procedure with an environmental impact assessment and the participation of the public having taken place.

The contaminated brines above the exemption values of the Radiation Protection Ordinance, which until recently had been transported into the lowest area of the Asse II, can only be transported there when the relevant licences according to radiation protection law have been granted. Until then, it is necessary to collect the contaminated brines in the mine but they may not be transported.

In addition to the new requirements according to nuclear and radiation protection law, the supervisory rules of the mining law have to be observed. This is a result of Section 9b, paragraph 5, No. 3 of the AEA which states that the nuclear plan approval does not cover the permissibility according to the provisions of mining law. This provision allows for the fact that the Asse II is not only an installation of the federation according to Section 9a, paragraph 3 of the AEA but at the same time, it is a mining project for whose supervision the competent mining authorities are responsible.

When it is intended or even imperative that residual salts from other salt heaps (such as the salt heap of the former rock salt mine Ronnenberg) are again inserted to stabilise the mine rooms before the nuclear plan approval decision for the decommissioning of the Asse II has been made, the mining authorities would still be the responsible authority. These activities could, therefore, only be carried out on the basis of the operating plan system of the mining law currently applicable. The new operator BfS is at present examining alternatives to the above given closure concept as well as the possibility of retrieval of the waste. A decision regarding an adequate closing concept is not expected before the end of this year.

The decision regarding which decommissioning concept is ultimately favoured by the BfS will probably only be made after a comparison of the options and their evaluation. Consequently, a final commitment to a decommissioning concept will not occur in 2009.

The costs for the decommissioning of the Asse II and the resulting final closure of the mine are, as before, to be borne by the federation.[53]

52. Heller, “10. Gesetz zur Änderung des Atomgesetzes”, *Atomwirtschaft* 2009, p. 122.

53. Bundestagsdrucksache 16/11609.

8. Outlook

It is to be hoped that, after the enactment of the 10th Amendment to the AEA and the transfer of the Asse II to the BfS, the activities concerning the closure of the Asse can quickly be executed. The risk for the public and the environment arising from this burden of the past with the instability of the mine rooms and the brine intrusions, do not allow for any unnecessary loss of time. From now on, all necessary procedures for the decommissioning of the Asse, in particular the nuclear plan approval procedure according to Section 9b AEA, have to be carried out quickly. Before then, a sustainable decommissioning concept has to be determined. This means that the existing know-how in the Federal Republic of Germany and internationally with respect to issues such as the furnishing of proof of long-term safety, have to be activated, presented to the public and discussed as a pivotal question of the nuclear plan approval procedure for the decommissioning of the Asse II. In addition to legally required public participation, it is also necessary to inform the public in the surrounding areas and to find ways to rebuild lost trust.

As a result, it is envisaged to include the population of the surrounding areas and specific stakeholders in the decision-making process. It will be interesting to see how this new form of participation, which is neither specified by the law nor pre-structured, will prove itself in practice. In particular, whether this new form of public and stakeholder participation is acceptable to the public and whether the experience gained could be utilised in other projects will need to be assessed.

Changes in the Legal Status of the Commissariat à l'énergie atomique (CEA)

*by Laetitia Grammatico-Vidal**

"A scientific, technical and industrial entity with legal personality and administrative and financial autonomy is hereby established, called the Atomic Energy Commission and placed under the authority and control of the Minister for Industrial and Scientific Development"

This provision in the Ordinance of 18 October 1945[1] is the birth certificate for the Atomic Energy Commission (hereinafter CEA, *Commissariat à l'énergie atomique*), a public entity whose legal nature has, for a long time now, been unique and the subject of debate. On 18 October 2009, the CEA will nevertheless celebrate its 64th anniversary.

Ongoing changes in the field of research have recently led the government to amend the provisions of the Research Code by Ordinance of 11 December 2008.[2] Once again the CEA, a public research institution, was reclassified among the "energy research establishments", a category not altogether consistent with the historical and current evolution of the mandate of this public body, given its wider scope of responsibilities. This body has, in fact, evolved from a public establishment with a nuclear mission into a public research establishment with a technological mission. It is interesting, therefore, to discover, or rather rediscover, this organisation, its legal nature and the changes it has undergone.[3]

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* Mrs. L. Grammatico-Vidal, who has a PhD in law, is the Head Legal Advisor at the ITER-France Agency within the Atomic Energy Commission. The author alone is responsible for the facts and opinions expressed in this article.

1. Section 1 of Ordinance No. 45-2563, J.O. of 31 October 1945, p. 7065 and Decree No. 45-2572 of 18 October 1945 enacting a public administration regulation for the application of the Ordinance of 18 October 1945 establishing the Atomic Energy Commission, J.O. of 31 October 1945, p. 7079 and correction J.O., of 3 and 8 November 1945, p. 7212 and p. 7382.

2. Ordinance No. 2008-1304 of 11 December 2008 amending the legislative part of the Education Code, J.O.R.F. of 12 December 2008, p. 18960.

3. For studies on the Atomic Energy Commission, its organisation and legal status, see the Report by the Chairman of the Council, "Le Commissariat à l'énergie atomique", *La documentation française*, 1955; Rambaud, P., "Le Commissariat à l'énergie atomique", Thesis submitted at the University of Paris II, 1972; Loverini, M.-J., "Le Commissariat à l'énergie atomique", Gallimard, 1995.

The CEA, the result of exceptional circumstances[4] and complex activities, is today entering into a new era and must confront many national and supranational challenges. It is preparing, in effect, for a future nuclear industry (safer, less polluting, non-proliferating and more economical) and is conducting research into other energy solutions within the framework of sustainable development and limited greenhouse gas effects (hydrogen technology, fusion, alternative energy technologies). It also has another goal, to make technological research available to industry, not only by developing micro- and nano-technologies but also biotechnologies or even to contribute technology for the benefit of scientific knowledge of living creatures,[5] matter,[6] climate and the environment.[7]

The CEA must also address the challenges of national defence and be capable of maintaining a safe, reliable and permanent deterrence capacity without recourse to nuclear testing, of actively participating in the monitoring of treaties and in the fight against nuclear proliferation and terrorism and, in addition, it must develop nuclear-powered engines for the French Navy's submarines and aircraft carriers.[8]

The CEA's status has served to accommodate these changes, all the while itself being in a state of evolution. The intention of the Government in 1945 was to set up a body which would be "very close to the government and, so to speak, intertwined with it […] but at the same time enjoy a great deal of freedom of action".[9] It therefore had to respond to the demands of efficiency and continuity to protect itself from the uncertainties of politics, but it was also destined to carry out activities in the nuclear sector over which the state wished to maintain control.

The question of its legal status was therefore raised right from the start; would it be a ministerial department, a high commission, a commission without legal personality or a public body?

In theory, given the special nature of public establishments, an entity's status determines the legal regime applicable to its activities and these activities can only be carried out within the framework of roles assigned to it by its establishing text. Yet Section 1 of the Ordinance of 18 October 1945 describes the CEA as "a scientific, technical and industrial establishment", a status which made it impossible to determine which single legal regime governed its activities.

Ordinance No. 2004-545 relating to the legislative part of the Research Code could have led one to believe that the unique nature of the CEA's legal status had separated it from its clear classification as an industrial and commercial public establishment (*établissements publics à caractère industriel et commercial* – EPIC). However, the unusual nature of the CEA's legal status is not simply due to its definition by law; it is also the result of the tasks assigned to it. In fact, it is these tasks which, since

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4. On the origins of the CEA, see Jean-Claude Petit, "Modernité du statut juridique du CEA et nouvelle gestion publique", *RFFP*, No. 84, 2003, p. 135, particularly point 2 where the author refers to the roles played by Raoul Dautry, Frédéric Joliot and Jean Toutée in preparing the ordinance.

5. The goal here is to apply nuclear technologies to the health fields: radiobiology, imagery, protein structure.

6. The objective here is to explore and better understand matter.

7. It studies climatic mechanisms and was, for example, the first to warn of the Sumatra Tsunami on 26 December 2004.

8. In spite of the strategic importance of this body, it is frequently the case that only its nuclear energy functions, whether civilian or military, are known or at least presumed to be known by civil society, irrespective of their applications.

9. Preamble of Ordinance No. 45-2563 of 18 October 1945.

1945, have helped to determine and define its status (see Part I). Today, and since 2004, with CEA's status being clearly determined by the Research Code, it is legitimate to wonder about the impact of this classification on the legal determination of its role (see Part II).

I. A status determined by the express tasks assigned to the CEA

Historical circumstances,[10] together with government policy at the time, led to the creation of the CEA as a body with multidisciplinary functions, which influenced its status (see A), having both public and private sector powers.

Again, the combination of circumstances arising from the development of the first major nuclear energy projects at the end of the 1960s, the nuclear policies of a number of countries and the problems linked to the reactor industry[11] all led to the reorganisation of the CEA and of its tasks in 1970, and thus to the evolution of its status (see B).

A. A dual status linked to multidisciplinary tasks

In 1945, a clear decision had been made not to categorise the CEA as an ordinary public establishment. Even in the preamble to the ordinance which established the CEA, its dualistic nature was apparent, the result of the nature of its assigned tasks, both administrative and industrial; the CEA was required to "pursue scientific and technical research into the use of nuclear energy in the various fields of science, industry and national defence".[12] Its status, from the very outset, was described as *sui generis* or *of its own kind*.

Its administrative tasks (which may be described as being in the public interest) were *a priori* more numerous than its industrial ones.[13] However, its field of competence potentially covered all stages of the nuclear fuel cycle, from prospecting and mining of uranium deposits through to the construction, on an industrial scale, of facilities for generating nuclear energy. Its scientific research activities covered both fundamental and applied research into radiation protection and military applications.[14]

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10. See *Notes et études documentaires*, No. 3246 of 18 December 1965; see also Robert Hirsch, "Vocation et missions du CEA", *Revue de la défense nationale*, 1970, p. 357.

11. The competition between the French UNGG reactors (natural uranium graphite gas) and the American PWR system has been discussed at length in all publications on nuclear energy.

12. Section 1 of the aforementioned Ordinance of 18 October 1945.

13. The objective was to study measures to ensure the protection of persons and property, to supply the government with all information concerning nuclear energy and its applications and, in particular, advise it in the negotiation of international agreements; in general, to take all necessary steps to ensure that France was in a position to benefit from the development of this branch of science. For the execution of its mission and in accordance with the rules laid down for its functioning, it was given "the powers currently held by the ministers concerned". As for its industrial missions, they enabled it to organise and control, in agreement with the ministerial departments concerned, the prospecting for, and mining of, deposits of the raw materials required, namely uranium and to construct general nuclear energy facilities on an industrial scale.

14. The powers given to the CEA under the 1945 Ordinance were therefore significant, as pointed out by the Council of State (*Conseil d'Etat*) in an opinion of 1 July 1947 relating to the Commission's power directly to mine deposits. In this opinion, the Council of State described the CEA as a state-funded public establishment but without giving further details about its administrative or industrial and commercial nature.

From then on, while it was not possible to determine its exact legal status by reference to its assigned duties, the CEA nevertheless, quickly and without doubt, came to be considered as a public body, created as it was by a decision of the public authorities with functions of general interest being assigned to it. Its status as a public body was, in fact, confirmed in 1947 by the Council of State.[15]

The fact remains however, that because of the multidisciplinary nature of its duties, the CEA can be classified either as an administrative public establishment (*établissements publics à caractère administratif* – EPA)[16] or as an industrial and commercial public establishment (EPIC).[17] "The government entity which is the CEA"[18] is publicly funded, has assigned duties that are in the public's interest and has powers which are normally granted to ministers in order to carry out those duties, all the while being directly attached to the President of the Council. In addition, under the terms of the 1945 Ordinance,[19] the CEA is privately managed, reflecting the desire of Parliament at the time to grant it a certain autonomy and room to manoeuvre in order to carry out its tasks, notably those of an industrial nature.

As the use of nuclear energy for peaceful purposes grew, the CEA's industrial function was given great importance, allowing it to fill a gap and play the role of pioneer or innovator before going on to create and promote subsidiaries.

However, the emergence of a nuclear industry subject to private law required, amongst other things, a redefinition of the CEA's role.

B. Changes to the CEA's status reflecting the redefinition of its role

The remarkable achievements of the CEA from 1945 to 1970 were in large part due to the unique status given to it from the outset.[20] However, two factors led to an amendment of the legal regime applicable to the CEA which led, in turn, to a modification of its role which influenced, in its turn, the nature of its status: first, in 1967-68 political and economic difficulties appeared, even though unrelated to the Commission's own activities; and secondly, the removal from the CEA's mandate of its responsibility to construct nuclear power plants, totally given over to EDF.

1. Decree No. 70-878 of 29 September 1970 redefined the functions of the CEA in light of the development of the nuclear industry in France: "The Atomic Energy Commission shall, in accordance

15. See the aforementioned opinion. See also in a similar vein CE, Sect. 20 April 1951, "Fauquier", *Rec*., p. 209; CE, 13 January 1960, "Laurent", Rec., p. 32 and *AJDA*, 1960, p. 227; Trib. Confl., 11 October 1976, "Sieur Bachellerie et CGT/Foc/CEA", unpublished.

16. An administrative public establishment is defined as a legal person under public law with administrative and financial autonomy managing a public service of an administrative nature. Its staff are subject to the special regime of general regulations governing civil servants.

17. An industrial and commercial public establishment is defined as a legal person under public law managing a public service activity under conditions similar to those of an industrial and commercial private enterprise.

18. A quote from Henri Puget, "Aspects du droit de l'énergie atomique", Tome 2, CNRS, 1967, p. 12.

19. Section 5 of the Ordinance authorises the CEA "to ensure its financial management and submit accounts in accordance with commercial usage". Moreover, its dealings with employees are also regulated by private law.

20. See the study in: *Les Notes et études documentaires*, "Le commissariat à l'énergie atomique face à l'avenir"*, La documentation française*, 1 December 1972, No. 3945-3946.

with directives set down by the government for the use of nuclear energy in the various fields of science, industry and national defence, carry out the following functions […]".

Some of the CEA's functions are still of a mixed nature, such as conducting scientific and technical research. The 1970 Decree nevertheless withdrew some of the CEA's public authority prerogatives, notably recourse to powers that are normally assigned to ministers. The CEA would henceforth be answerable to the Minister for Industry.

The CEA's role of government advisor on international relations was, however, confirmed; it was obliged to follow "scientific, technical and economic developments abroad relating to its activities with a view to advising the government, in particular on the negotiation of international agreements". It also retained its mission of proposing "proper measures to protect persons and property against the effects of atomic energy and to contribute to their implementation".

Section 2 of the 1970 Decree provides that it "may engage in the transformation of, and trade in, nuclear materials, and generally in all operations concerning such activities and linked directly or indirectly to them; at the request of the government or of builders and users, it shall participate in programmes to improve industrial techniques". It may also, "in the various fields relating to its activities, build or help build and produce devices, materials or component parts". The last paragraph of Section 2 also gives it the power "to extend certain of its non-nuclear activities either for economic reasons or with the intent of participating in programmes of general public interest".

2. The CEA's missions were therefore becoming increasingly administrative, reinforced by its authority to create subsidiaries under Section 2 of the 1970 Decree which empowered it "to engage in the research, production, storage and transport of nuclear materials, either directly or through the intermediary of enterprises in which it holds an interest".

In this way, the CEA's industrial activities, in particular those relating to the fuel cycle, industrial applications and reactor technology, the sale of radioisotopes for medical uses abroad and of computer processing, were all transferred to its subsidiaries.

The first subsidiaries were created in 1955, but from 1970 onwards, the process of delegating to subsidiaries was used more and more. Nuclear activities were no longer kept exclusively within the public sector and the decree did not specify whether the shareholding had to be a majority one or not.[21]

The process of privatisation through the use of subsidiaries was encouraged by the government and spread increasingly with the creation of numerous subsidiaries between 1970 and 1985.

Although creating subsidiaries did not legally amount to privatisation, it did nevertheless raise a number of questions about the private nature of the subsidiary's activities. These subsidiaries were managed in accordance with principles applying to markets and competition rather than those of public service.

The creation of subsidiaries had consequences for the CEA and its internal organisation insofar as an agreed approach had to be ensured between the CEA and its subsidiaries, now known as the "CEA Group". This resulted in the setting up of co-ordination structures such as a board of directors (the composition of which varied), a committee specialised in personnel matters and boards which

21. According to Professor Jean-Philippe Colson, the CEA "is returning to the fold", in "Aspects juridiques de la politique nucléaire de la V° République", *AJDA*, June 1977, p. 290 to 299.

brought together the directors responsible for certain given sectors (finance, international relations, public relations etc.).

From an industrial standpoint, the CEA Group, devoid of any legal personality, consists of the public entity CEA, its subsidiary holding company CEA-I and all of the companies, both French and foreign in which the CEA (usually through its holding company) directly or indirectly holds an equity interest. This is the only such case in France, and without doubt anywhere else in the world, at least on this scale.

It was reasonable to think that since the CEA's industrial activities were transferred to its subsidiaries, only its "administrative" activities would remain and would thus turn its status towards that of an administrative public establishment. However, the various texts relating to its equity holdings contain special provisions aimed at ensuring CEA's control over its subsidiaries and guaranteeing its position as majority shareholder.[22]

Thus, the CEA still has administrative activities, notably in the field of fundamental research, as well as industrial and commercial ones, conducted through the activity of its subsidiaries over which it holds significant power and control, as does the government.

With respect to certain branches of the law, such as social law and commercial law, the CEA is similar to an EPIC. However, in other areas it resembles an EPA, with economic leanings towards one category or another, all the while remaining a public establishment with a dual nature.

II. A clear rule on CEA's status

The codification of research[23] provided the opportunity to clarify and simplify existing structures in that field and led to the repeal of Ordinance No. 45-2563 which had set up the CEA.

Under the new ordinance, the CEA was given a clear status as an industrial and commercial public establishment (EPIC)(see A) as a result of which its functions were seen as more or less long term, given that this classification requires the application of the ordinary rules of law governing EPICs. This had not previously been the case due to the uncertainty surrounding its unique status. However, its public service functions and its public authority, particularly those of providing advice to the government with regard to foreign nuclear policy, remain intact (see B).

A. The status of an EPIC leading to legal adjustments

1. The Research Code contains provisions relating to research establishments and bodies (EPAs and EPICs) and to co-operative structures (public interest groups, industrial technical centres).

Public research establishments are considered as public establishments of an administrative nature, i.e. without any industrial or commercial purpose. They are also considered as scientific and technological public establishments which are then qualified as EPAs or as industrial and commercial public establishments.

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22. The Decree setting up CEA-Industrie contains a provision that any increase in the capital of the company or sale of CEA shares in it is subject to the joint approval of the Minister for Industry and the Minister for the Economy. Moreover, the Head of the CEA's inspection service carries out the duties of a government company inspector.

23. By Ordinance No. 2004-545 of 11 June 2004 relating to the legislative part of the Research Code.

Given its industrial and commercial mission, the CEA could not be classified as an EPA and therefore could not be included in two of these categories. Its classification as an EPIC alone seemed possible and thus the CEA was classified as an industrial and commercial public establishment.[24]

This classification did not, *a priori,* have any consequences for the legal nature of the CEA. It was considered to be an EPIC and, as such, was deemed to be in compliance with the law as stated by the higher courts for more than ten years. However, such a conclusion seems a little hasty, given that the ruling of the courts applied to certain fields only (social law, commercial law) and to only some of its activities.

Moreover, the codification led to the fact that the CEA constituted a public establishment category of its own kind, within the meaning of Article 34 of the Constitution.[25] This results from the Council of State's analysis, made in connection with its examination of the Research Code ordinance in draft form, that the CEA constituted a public establishment category *sui generis* within the EPIC category, even though in 1982[26] it had adopted the opposite position, as had the Disputes Tribunal in 1978.

Therefore, according to the Research Code, the CEA is a public research establishment *sui generis* (of a scientific, technical and industrial nature) which comes under the classification of an EPIC. This unambiguous classification into the EPIC research category, no longer leave any room to manoeuvre with respect to the application of ordinary law to EPICs.

2. There is, however, an ambiguity in relation to the "no change to the law" codification.[27] While such codification involves no change to the provisions themselves, Article L. 332-2 of the Research Code re-enacts the legislative provisions relating to the CEA's missions and completes them with the following:

> "With a view to using nuclear energy in the fields of science, industry and defence, the Atomic Energy Commission has the task of conducting the scientific and technical research required, participating in the protection of persons and property against the effects of nuclear energy, and carrying on the activities of research, production, storage, transport, transformation and trade in relation to nuclear raw materials".

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24. More specifically in Chapter II, Articles L. 332-1 to L. 332-7.

25. In practice, this classification means that the CEA, on its own, constitutes a Chapter of the Research Code (Chapter II of Title III: EPICs), whereas Chapters IV and V deal with generic categories of public establishments.

26. CE, 26 March 1982, like the Disputes Tribunal in 1978: TC, 24 November 1978, "National trade union of nuclear energy staff, CFDT", *Rec*. p. 465: "having regard to its purpose, the nature of its activities and the supervisory rules to which it is subject, the CEA is comparable to other national public establishments and does not constitute, on its own, a category of public establishment".

27. This concept was defined in Act No. 2000-321 of 12 April 2000 on the rights of citizens in their dealings with the administration. It means that existing provisions should in principle be re-enacted without amendment, subject to any changes required to improve the coherence of the drafting of the texts being brought together, the hierarchy of norms should be respected and the law harmonised. Ordinance No. 2004-545 was adopted in the circumstances provided for under Article 38 of the Constitution and in accordance with Sections 33 and 35 of Act No. 2003-591 of 2 July 2003 authorising the government to simplify the law.

"It may also, under conditions laid down by regulation, extend some of these research and development activities into non-nuclear fields".

This type of approach is authorised within the framework of "no change to the law" codification. However, the fact remains that there is a consequence for the CEA insofar as the general framework of its role, and the elements characterising its organisation and functioning, are now laid down by law. Similarly, although Parliament took care to point out that there was no substantive change to the law involved, adjustments of form were nevertheless made with regard to the CEA's functions, which could lead to their implicit redefinition.

Thus, while Section 2 of the Decree of 29 September 1970 was couched in exhaustive terms, Article L. 332-2 now provides that the mission of the CEA is "notably to…", so as to give it considerable room for manoeuvre, since "notably" means that the list of the CEA's missions is not exhaustive, although it is limited in accordance with the principle of the specialisation of public establishments for the use of nuclear energy in the fields of science, industry and defence. The last sentence of the paragraph means that the CEA may, subject to regulatory approval, conduct research and development outside the nuclear field.

The new classification of the CEA as a research establishment in the field of energy, a heading which includes three other entities (ANDRA, ADEME and IFP), raises questions about its specialisation and diversification. However, no substantive change was made to the drafting of the legislative provisions so it is possible to imagine that the CEA takes initiatives in other fields, at the instigation or with the approval of the government, a matter which is facilitated by its classification in the EPIC category.

B. Maintaining public service functions

When the CEA was set up, public service functions were assigned to it in order to meet public interest needs in the nuclear sector. These functions have not been called into question today, despite changes to CEA's status and its research activities for private sector partners. One field of activity in which the CEA's public mission is undisputed is that of international relations. In this sphere, the CEA's task is to monitor "scientific, technical and economic developments abroad relating to its activities in order to advise the government, notably in negotiating international agreements, as specified in Section 2 of Decree No. 70-878 of 29 September 1970 relating to the CEA".

In this capacity, the CEA advises the government on external nuclear policy issues (Treaty on the Non-proliferation of Nuclear Weapons, controlling sensitive exports in the nuclear field); in fact the CEA Administrator-General has been an *ex officio* member of the Council for Foreign Nuclear Policy since its creation in 1976.[28] This policy of ensuring representation was confirmed when the Nuclear Policy Council was set up by Decree No. 2008-378 of 21 April 2008,[29] with the CEA Administrator-General being made an *ex officio* member of this Council. The Chairman of the French Nuclear Safety Authority and the High-Commissioner for Atomic Energy may also sit on the Council, if invited, for issues relating to their fields of competence.

28. By Decree No. 76-845 of 1 September 1976 setting up the Council for Foreign Nuclear Policy, JORF of 2 September 1976, p. 5315.

29. Decree published in the JORF of 23 April 2008, text No. 1.

The CEA also represents France in international organisations in the nuclear sector, such as the OECD Nuclear Energy Agency (NEA),[30] the International Atomic Energy Agency (IAEA) and the European Communities. It also participates in intergovernmental negotiations in the nuclear field and ensures any follow-up required with regard to any resulting agreements.

This role has been reinforced in recent years by the presence of CEA advisers in embassies, such as those in Berlin and Budapest as well as nuclear and other advisers[31] in new energies and technologies.[32]

Today, the CEA plays a major role in the implementation of French nuclear policy with the aim of making available to countries wishing to develop nuclear energy, a framework which guarantees non-proliferation, security and safety. This role is complemented by its very active participation in the Global Energy Nuclear Partnership initiative alongside the United States Department of Energy.

In this context, the CEA has been authorised to set up an internal service with administrative and budgetary autonomy called "Agence France Nucléaire International".[33] This service operates within the broader framework of French nuclear policy and its purpose is to offer support to foreign countries wishing to develop civilian nuclear energy programmes. In particular, the agency's role is to help such countries set up the institutional, human and technical environment necessary for the construction of a civil nuclear power plant under proper conditions of safety, security and non-proliferation.

Similarly, the CEA Director for international relations sits on the Board of Governors of the International Atomic Energy Agency (IAEA) and is a member of the Secretariat of the Euratom Scientific and Technical Committee (STC) which ensures the application in France of international controls of nuclear materials carried out by the European Commission and the International Atomic Energy Agency (IAEA). The STC also ensures implementation of the Euratom Treaty while helping to prepare French positions adopted by the General Secretariat for European Affairs on nuclear topics, in collaboration with the Permanent Representative of France in Brussels.

The CEA is also responsible for all French research activities on controlled thermonuclear fusion carried out within the Euratom framework since 1959. In fact, in Europe, all research into this topic is integrated into one single programme (the Euratom Fusion Programme). Member states, as well as those who wish to associate with the programme, such as Switzerland, take part in it by means of a "contract of association" with the European Union which is administered by the CEA. The work is carried out by qualified European research bodies known collectively as the "Euratom Fusion Associations".

Finally, in order to implement the commitments which were undertaken by France with regard to the siting of the international thermonuclear fusion experimental reactor (the so-called "ITER Project") in France, the CEA was authorised, in 2006, to create an internal service with administrative

30. NEA activity is supervised by a Steering Committee within which the CEA heads the French Delegation.

31. As in London, Tokyo, Moscow, Beijing, Washington, Vienna (Permanent Mission of France at the Office of the United Nations and of International Organisations), Permanent Representation of France at the European Union.

32. As in Seoul, New Delhi.

33. Decree No. 2008-441 of 9 May 2008 authorising the creation of the *Agence France Nucléaire International* within the Atomic Energy Commission, J.O. of 10-6-2008, p. 7779, text No. 2.

and budgetary autonomy called *Agence ITER France*.[34] Its task is to prepare the site and the initiation of the ITER Project, to ensure the technical and operational interface *vis-à-vis* international and European authorities, to conduct public participation activities, to prepare and present the ITER Project safety and security reports and to carry out any other tasks assigned to it. It is also responsible for gathering together French resources (funds and contributions in kind) from the government, territorial authorities or the CEA, for handing them over to the European authority, for ensuring the proper carrying out of the installation's dismantling operations on the basis of specific contributions received from international partners and collected by the international authority. *Agence ITER France* then monitors, for France, the evaluation of dismantling costs on a continuous basis and the setting up of corresponding funds and assets by the international authority.

The CEA has been, from the very outset, a source of expertise and proposals for the public authorities which has not been affected by changes to its legal status. It would seem that the evolution of the CEA's status as an industrial and commercial public establishment has not prevented it from developing its public service functions, as evidenced by the CEA's role in international matters and the creation of an internal service with special status in areas which are largely geared to public service.

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The existence of its multidisciplinary and cross-cutting functions, together with its special status, has resulted in the evolution of the CEA status towards one or other of the existing categories of public law establishments, that of an administrative public establishment or that of an industrial and commercial one, depending on its mission. This has always been the source of its strength and richness.

While its classification in 2004 into one of the existing categories of public law establishments led to a change in its status and to an evolution in the instruments which were and could be used by the CEA, it did not really change the "blended" nature of this organisation. This is also true following the recent amendments to the Research Code. The unique nature of the Commission remains, a public research establishment combining fundamental research activities with technological and military research, making it a truly "one of a kind" entity.

34. Decree No. 2006-752 of 29 June 2006 authorising the creation of the ITER-France Agency within the Atomic Energy Commission, J.O. of 30-6-2006, p. 9787.

Case Law

Canada

Keen v Attorney General of Canada[1] *(2009)*

By decision dated 7 April 2009, Mr. Justice Hughes of the Federal Court of Canada denied an application for judicial review submitted by Linda Keen, the former President of the Canadian Nuclear Safety Commission (CNSC), by which she challenged the legality of the Order in Council which removed her as President. The court dismissed the application,[2] finding that the decision had been lawful.

Background

In December of 2007, the so called "isotope crisis" led to the passing of legislation by Canada's Parliament that permitted the resumption of operation by Atomic Energy of Canada Limited (AECL) of its National Research Universal (NRU) Reactor for a period of 120 days "despite any conditions of its licence under the Nuclear Safety and Control Act relating to the installation of seismically qualified motor starters on the heavy water pumps and the connection to the emergency power supply".[3] This measure was taken in light of what the Preamble to the legislation called a "serious shortage of medical isotopes in Canada and around the world" that was "putting the health of Canadians at risk".

Before it took this measure, the Parliament heard evidence from and questioned the President of the Canadian Nuclear Safety Commission (CSNC), Ms. Keen, a member of her staff, representatives from AECL and other nuclear experts who gave evidence in the extraordinary Parliamentary session.[4] The legislation followed a directive that had been issued by the Governor in Council pursuant to Section 19 of the Nuclear Safety and Control Act (NSCA),[5] the legislation creating the CNSC and providing its authority. The directive required the CSNC to "take into account the health of Canadians who, for medical purposes, depend on nuclear substances produced by nuclear reactors".[6]

Ms. Keen was, until 15 January 2008, the President of the Canadian Nuclear Safety Commission as well as a member of that Commission. By Order in Council dated 15 January 2008, the Governor in Council terminated Ms. Keen's designation as President. She remained a full-time Commission member until she resigned that position in September of 2008 when, by a letter addressed

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1. Submitted by Jacques Lavoie, Senior General Counsel and Lisa Thiele, Senior Counsel, both of the Legal Services, Canadian Nuclear Safety Commission. Opinions expressed in this summary are those of the authors alone and do not purport to represent the views or the policies of the Canadian Nuclear Safety Commission or of the Government of Canada.

2. *Linda Keen v Attorney General of Canada*, 2009 FC 353.

3. An act to permit the resumption and continuation of the operation of the National Research Universal Reactor at Chalk River, S.C. 2007, c. 31, subsection 1(1).

4. Parliamentary consideration of the bill introducing the legislation included witnesses testifying before a Committee of the Whole, a practice that had not been followed, according to the Chair of the Committee, since the Second World War [*House of Commons Debates* (11 December 2007) at 1930].

5. S.C. 1997, c. 9.

6. SOR/2007-282.

to the Prime Minister dated 22 September 2008, she advised that she was no longer comfortable serving in a position as member of the Commission.

Legal context

In Canada, the issue of the requisite independence of decision-makers such as administrative tribunals like the Commission is examined by courts with reference to three indicia: (i) security of tenure, (ii) financial security and (iii) administrative control. The situation arising in the *Keen case* involved the first, security of tenure. "Security of tenure" issues may involve a number of questions, one of the more fundamental is the nature of the appointment which, because it determines the legal requirements for removal from the position, is a clear indicator of the level of independence of the appointee.[7]

Appointments of persons to positions of decision making authority in Canada generally are one of two varieties. Appointment "at pleasure" indicates that the appointee may be removed at the discretion of the appointing authority (usually the executive), so long as a minimum level of procedural fairness is observed in the removal process. Appointment "during good behaviour", alternatively, means that the appointing authority intends for the appointee to be able to be removed from the appointed position only for cause, meaning for some fault on the part of the appointee, which would have to be established through a fair and reasonable process.

Issues before the court

In the judicial review application, Ms. Keen argued that the Order in Council terminating her designation as President of the Commission had been illegal, since the order was not made on the basis of reasons, or on the basis of her having failed in any obligation respecting her "good behaviour". She maintained that the designation was "during good behaviour" and not "at pleasure", and that therefore the fact that there was no "cause" for her removal or a hearing conducted within the rules of natural justice for removal for cause, meant that the decision was invalid and unlawful.

Ms. Keen took the position also that, if the designation as President was indeed "at pleasure" – which would entail lesser obligations to justify the decision to terminate the designation – then this level of security of tenure of the President of the CNSC would fail to take into consideration Canada's obligations under the Convention on Nuclear Safety. It was submitted that Canada's obligation to create and support an independent nuclear regulatory body, and to "take the appropriate steps to ensure an effective separation between the functions of the regulatory body and those of any other body or organisation concerned with the promotion or utilisation of nuclear energy",[8] were more consistent with a President of the Canadian regulator being appointed "on good behaviour". Any ambiguity in the NSCA respecting the nature of the designation of a member as President, should therefore be interpreted so as to result in the designation being "during good behaviour", according to Ms Keen's argument.

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7. It was not before the court to examine the indicator of independence represented by the degree of "administrative control", or the degree to which the Commission might be subject to the authority and control of the executive. Such an examination could have involved the issue of the scope of the directive that was issued on 10 December 2007. However, in light of the wording of Section 19 of the NSCA, which allows directives only "of general application on broad policy matters with respect to the objects of the Act", we may be satisfied that the directive did not – as it could not – direct a result in a specific matter before the Commission or alter the nuclear safety mandate given the Commission by Parliament.

8. Convention on Nuclear Safety, 17 June 1994, INFCIRC/449 (entered into force for Canada 20 October 1996), Article 8, paragraph 2.

In addition to the request for an order "declaring invalid and unlawful, or quashing, or setting aside the OIC of the Governor in Council", Ms. Keen also sought an order "confirming the full force and effect of the Order in Council for the Applicant's re-appointment, dating November 15, 2005". At least until she resigned her position as full-time member of the Commission in September 2008, Ms. Keen had sought to be effectively "reinstated" to her post as President as a result of the judicial review application. At the hearing of the application, however, the court was advised that Ms. Keen was not pursuing this relief from the court, no doubt in recognition of the fact that her resignation from the position as Commission member made her ineligible to be President by the mere quashing of the order removing her as President.

The court's decision

(i) Nature of designation

As a result of the fact that Ms. Keen had resigned as Commission member, the Attorney General of Canada (AG) submitted that the application had been rendered moot, such that the court should not hear it. Subsection 10(3) of the NSCA provides:

> The Governor in Council shall designate one of the permanent members to hold office as President.

Given Ms. Keen's resignation as a permanent Commission member, the AG took the position that the application was moot, as it would determine merely what had become a hypothetical or abstract question and a decision of the court would have no practical effect. The court did not agree, and on the issue of mootness, Mr. Justice Hughes decided to hear the matter fully, in light of the fact that there could be a future claim by Ms. Keen against the government regarding her dismissal. He ruled:

> "… more importantly, the issue raised may well have broader application than just upon Ms. Keen's circumstances, but upon many others who have found themselves appointed to government positions".[9]

The court characterised the substantive issue before the court to be "the propriety of the Order in Council terminating Ms. Keen's designation as President of the Commission", noting that she had remained a member until her resignation. First, the court noted that there was no question that the appointment of Ms. Keen as a member of the Commission had been "during good behaviour"; the NSCA provides the following in Subsection 10(5):

> Each permanent member holds office during good behaviour for a term not exceeding five years and may be removed at any time by the Governor in Council for cause.

Noting that the legislation is silent in Subsection 10(3) as to the nature of the designation of one permanent Commission member as President, J. Hughes then took note of the federal legislation in Canada governing this issue, namely the Interpretation Act[10] which provides that every public officer is deemed to hold office "during pleasure" unless otherwise expressed in the relevant enactment, commission or instrument of appointment. There being no explicit provision in Subsection 10(3) of the NSCA dealing with the nature of the designation, J. Hughes also restated that the commission at issue had been explicit, as follows:

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9. *Supra*, note 2 at paragraph 43.

10. R.S.C. 1985, c. I-21, Section 23.

> "It must be restated that the commission granted by Her Majesty to Ms. Keen clearly states that her appointment as member is for five years 'during good behaviour' and that the designation as President is 'during Our Pleasure'. It could not be more clear".[11]

The court concluded that Ms. Keen's designation as President, unlike her appointment as Commission member, was "at pleasure". This meant that a minimum of procedural fairness conditions were required to remove her as President, but that she enjoyed relatively secure tenure as a permanent member of the Commission for her term, as she could not be removed without cause.

The court was satisfied that the minimum procedural fairness obligations required, in order to remove an "at pleasure" appointee, had been observed. It found the Order in Council removing Ms. Keen's designation as President to have been lawful.

(ii) Adequacy of "at pleasure" designation

As noted, Ms. Keen had argued that if the designation as President was "at pleasure", this level of security of tenure would not reflect an adequate independence, as required by the Convention on Nuclear Safety and as counselled for nuclear regulators worldwide. Given the fact that the NSCA was silent on the nature of the designation of President, she had argued for the court to interpret the designation to be "during good behaviour" in light of Canada's international obligations.

Both parties relied on a Supreme Court of Canada decision dealing with the nature of statutory administrative tribunals and the requirements of independence, *Ocean Port Hotel Ltd. v British Columbia.* In that decision, the Supreme Court considered the degree of independence required by the chair and members of a provincial Liquor Appeal Board, and in that context provided general principles respecting the nature of statutory tribunals and the relative roles of the legislative and judicial arms of government, as follows:

> "Ultimately, it is Parliament or the legislature that determines the nature of a tribunal's relationship to the executive. It is not open to a court to apply a common law rule in the face of clear statutory directions".
>
> "Administrative tribunals … are, in fact, created precisely for the purpose of implementing government policy. Implementation of that policy may require them to make quasi-judicial … decisions. Thus they may be seen as spanning the constitutional divide between the executive and judicial branches of government".[12]

The court found that in this case, there was no ambiguity in the law that left room to be informed by judicial considerations of independence based on the general concepts of natural justice. Here, the enabling legislation, the Interpretation Act, and the orders in council themselves, were clear. This was determinative of the issue, since it is the prerogative of Parliament to create statutory bodies and to set out the scope of their powers.

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11. *Supra*, note 2 at paragraph 73.

12. [2001] 2 S.C.R. 781 at paragraphs 22 and 24.

Similarly, the court did not find persuasive the similar argument that had been based on the Convention on Nuclear Safety. J. Hughes found:

> "I have not been referred to any part of the *Convention on Nuclear Safety* that would address the security of tenure of a person designated as the President of a Commission such as the one at issue here**, particularly where that person may continue as a member of the Commission**. I find no real help from that point".[13] (emphasis added)

In practical terms, Ms. Keen had been removed as President of the Commission, but remained as a permanent, full-time member. Parliament had determined that the Governor in Council could not remove her from this position as member, without establishing cause.

The application was denied and no costs were ordered to be paid.

Conclusion

As indicated above, Mr. Justice Hughes took particular note of the fact that the removal of Ms. Keen's designation as President of the Commission did not result, and could not result, in her removal as a member of the Commission. It may be an important fact in this regard that the NSCA deals with decision making by the Commission as follows, in Section 23:

> "The President or the presiding member shall not vote at a meeting of the Commission or a panel of the Commission, as the case may be, except that the President or presiding member has and shall cast the deciding vote in case of an equal division".

Thus, the removal of a designation as President does not silence the decision making voice of a Commission member. In fact, the "voice" of a President, in terms of the decision making of the Commission on matters under the NSCA and within its purview as a statutory tribunal, may only break a tie.

From the perspective of the necessary indicia of independence, the NSCA affords to the members of the Commission adequate security of tenure, as they serve "during good behaviour" and can be removed only for cause. The court's decision confirms that this security of tenure is afforded to the Commission member and not to any member's designation as President.

France

Judgement of the Council of State rejecting the claims made by environmental NGOs against the Decree licensing the construction of the EPR at Flamanville[14] (2009)

On 23 April 2009, the Council of State rendered its decision with regard to the actions for annulment entered by three associations for environmental protection[15] against the Decree licensing the

13. *Supra*, note 2 at paragraph 77.

14. Kindly submitted by Christophe Loy, Deputy Director, and Fiona Geoffroy, Legal Adisor, both at Legal Services, Production and Engineering, Électricité de France (EDF). Opinions expressed in this summary are those of the authors alone and do not necessarily reflect the views of EDF.

15. Association France Nature Environnement, Réseau Sortir du Nucléaire in conjunction with the Comité de réflexion, d'information et de lutte anti-nucléaire – CRILAN and Greenpeace France.

construction of the nuclear installation "Flamanville 3" comprising an EPR reactor (see *Nuclear Law Bulletin* No. 79).

This decree establishes, *inter alia*, the characteristics of the installation and the time period within which it must be commissioned. It also specifies the manner in which the installation should be designed and operated in order to guarantee its safety.

The principal arguments invoked by the associations were as follows:

1. The environmental impact study annexed to the licensing request was alleged to be insufficient with regard to the provisions of Article R. 122-3 of the Environment Code. The associations maintained that the impact study was deficient with regard to the description of the direct effects of the project, in particular concerning the impact of liquid releases of tritium, and also the indirect effects of the project, more specifically the management and environmental impact of nuclear waste.
2. The decree challenged was alleged to be in contradiction with the objectives of Council Directive 85/337/EEC of 27 June 1985, as amended, on the assessment of the effects of certain public and private projects on the environment, as well as the right to public participation as enshrined in the Aarhus Convention of 25 June 1998 on access to information, public participation in decision making and access to justice in environmental matters, on the grounds that the debate upon the merits of the EPR project was already closed since the adoption of Programme Act No. 2005-781 of 13 July 2005 fixing the orientations of energy policy, i.e. before the public debate (19 October 2005 to 18 February 2006) and the public enquiry (15 June to 31 July 2006) were held.
3. The decision challenged was alleged to violate the provisions of Article 29 of Act No. 2006-686 of 13 June 2006 on Nuclear Transparency and Safety ("TSN Act"), in particular the requirement to demonstrate that the necessary financial provisions have been made for dismantling.

During the Council of State hearing on 8 April 2009, the Rapporteur Public rendered her conclusions in which she pointed out that this was the first time the court was asked to rule on a Decree licensing the construction of a nuclear installation adopted pursuant to Article 29 of the TSN Act.

The Rapporteur examined the arguments concerning the public consultation procedure. She rejected the claim with regard to the alleged violation of the provisions of Article 6, paragraph 4 and Article 8 of the Aarhus Convention (as outlined above) which she considered had no direct effect in the domestic legal system. Similarly, she believed the reference to the objectives of Article 6.2 of Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment to be ineffective, given that this directive deals only with "plans and programmes", which do not include decrees licensing nuclear installations. Furthermore, as the application comprised a full environmental impact assessment which was submitted to the public before the licence was delivered, the alleged infringement of Council Directive 85/337/EEC of 27 June 1985, as amended, on the assessment of certain public and private projects on the environment, was not demonstrated.

The Rapporteur then turned to the alleged violation of Article 7 of the Environment Charter. She considered that the provisions that apply to the organisation of the public enquiry and the public debate guarantee the principle of public participation as enshrined in Article 7 of the Charter and ensure its correct implementation. In the case at hand, the fact that certain authorities had announced

the intention to construct an EPR at the Flamanville site did not deprive the public debate or the public enquiry from their respective effects.

The Rapporteur continued to examine the claims regarding the content of the file submitted for the public enquiry and its alleged insufficiencies. In this respect, she considered that the environmental impact study included an evaluation of the project on the radioactive releases of tritium, and analysed in a detailed manner the effects of such releases on human health, concluding that the estimated doses are by far inferior to the maximum limits established by the Public Health Code. She also pointed out that the question of waste is examined in a thorough and precise fashion. The Rappporteur Public therefore suggested to the Council of State that it reject this argument.

Finally, the last argument referred to the question of the control exercised by the Council of State over the appreciation carried out by the Prime Minister in licensing a nuclear installation pursuant to Article 29 of the Act of 13 June 2006. The latter "reinforced considerably the framework within which a nuclear installation can be licensed, when we compare Article 29 to Article 3 of the Decree of 11 December 1963, which was until then the legislative basis for these licences. The 1963 Decree described in minute detail the rules governing competence and procedure, but did not establish any substantive conditions with regard to the legality of the procedure to deliver the licence".

Article 29.I of the TSN Act now provides that an authorisation to construct a nuclear installation:

> "cannot be issued unless, bearing in mind the scientific and technical knowledge of the time, the licensee proves that the technical or organisational measures taken or envisaged at the design, construction and operation stages as well as the general principles proposed for decommissioning or, for radioactive waste disposal installations, for their maintenance and surveillance after their final shut-down according to the procedures defined in VI, are likely to prevent or limit sufficiently the risks or drawbacks which the installation presents for the interests mentioned in I of Article 28. The authorisation takes into account the technical and financial capacities of the licensee which must allow him to conduct his project in compliance with these interests, especially to cover the costs of decommissioning the installation and conduct remediation work, and to monitor and maintain its location site or, for radioactive waste disposal installations, to cover the definitive shut-down, maintenance and surveillance expenditure".

The Rapporteur Public deduced from this that the terms used by the legislator in 2006 seem to point towards an evolution in the control of the legality as carried out by the Council of State "on the balance of different interests as carried out by the Administration, in particular with regard to the protection of the environment". She then examined the argument with regard to the financial capacity of EDF, which was alleged to be insufficient to cover future dismantling costs. Referring to various elements in the file, and in particular the "EDF Reference Document 2006", the Rapporteur expressed the view that EDF had indeed justified sufficient financial capacity, and in particular had demonstrated that assets designed to cover its nuclear obligations in the long term be placed in dedicated funds.

In its decision of 23 April 2009, the Council of State followed all of the recommendations expressed by the Rapporteur Public, and rejected the three actions filed against the Decree of 10 April 2007 licensing the construction of the nuclear installation "Flamanville 3".

United States

Judgement of the U.S. Supreme Court on the applicability of anti-dumping tariffs to the sale of low-enriched uranium (2009)

This case concerns the sale of low-enriched uranium (LEU) in the United States for use as fuel by commercial nuclear power reactors. In the U.S. Supreme Court, petitioner USEC, Inc., and its subsidiary United States Enrichment Corporation (collectively, USEC), sought to uphold a ruling by the U.S. Department of Commerce that "separate work unit" (SWU) contracts for uranium enrichment are contracts for the sale of goods, not services, and thus subject to anti-dumping tariffs assessed by Commerce under Section 731 of the Tariff Act of 1930.[16] The Supreme Court upheld the Commerce Department's interpretation and its assessment of an anti-dumping tariff.[17]

Utilities buy LEU either by an "enriched uranium product" (EUP) contract, which all parties in the case agreed to be a "sale of goods", or by a "separate work unit" (SWU) contract, where the utility provides the enrichment facility with feed uranium for processing. The utility pays the enricher for the costs of the SWUs – that is, the amount of energy required to enrich the uranium to the desired concentration of the U-235 isotope. The Tariff Act of 1930 calls for "antidumping" duties on foreign goods sold in the United States at less than their fair market value, but does not impose a duty on the international sale of services.[18] The question before the Supreme Court was whether this process constitutes a "service" not subject to anti-dumping tariffs or results in a sale of newly fabricated "goods" in the form of the enriched uranium.

The United States Enrichment Corporation, the only uranium enricher in the United States, complained to the Commerce Department that both product and SWU uranium were being sold in the United States by European enrichers at prices below the fair market value and materially harming the domestic industry. The French enrichment company Eurodif argued that a SWU contract was a sale of enrichment services and, therefore, not subject to an anti-dumping tariff on "goods". It noted that enrichers under a SWU contract do not take title to the feed uranium, unlike the purchaser of goods.

Upon receiving the charges from USEC, the Commerce Department investigated Eurodif's practices. Eurodif conceded that product contracts were for the sale of goods, but argued that SWU contracts were for the sale of services, and thus not subject to antidumping duties. The Department concluded that low-enriched uranium from France, including that sold under SWU contracts, was being sold in the United States below fair market value. The Commerce Department considered several factors in reaching its conclusion. First, the Department found that, because the uranium enrichment process accounts for about 60% of the value of LEU and substantially transforms the feed uranium, the process creates "the essential character" of LEU. Second, enrichers have control over the enrichment process and the level of usage of the uranium provided. Third, utilities do not participate in the process and are the sole buyers of LEU. Fourth, the Department rejected an argument that LEU should not be considered "sold" under a "tolling" regulation, which permitted a subcontractor that sells processing services in subject merchandise would not be considered a manufacturer or producer when it does not acquire ownership of the merchandise. According to the Department, this regulation – no longer in effect, and therefore not considered by the Supreme Court – applied to cases in which the good is sold by a manufacturer and resold by an exporter or reseller, and was only used for

16. 19 U.S.C. § 1673.

17. *United States v Eurodif S.A.*, 129 S.Ct. 878 (2009).

18. *Ibid* at 882, 883-84.

determining which sale (the original or the resale) should be used for calculating antidumping duties. Finally, the Department determined it could not rely on language used in a SWU contract calling the agreement a sale of enrichment services, because to do otherwise would permit the parties to convert a de facto trade in goods into a trade in "manufacturing services", – manufacturing fabricated goods from raw materials – which would circumvent antidumping laws and expose industries to unfair trade practices.

Eurodif challenged the Department's decision in the Court of International Trade (CIT), which remanded the case for an explanation of the tolling regulation.[19] Upon remand, the Commerce Department reiterated its application of the regulation, added its understanding that uranium enrichers own and hold title to the LEU they produce, and that they have complete control over the enrichment process.[20] The CIT reversed, stating that the Commerce Department's determination lacked evidence and was not in accordance with law.[21] USEC appeal this decision to the Court of Appeals for the Federal Circuit, which affirmed, stating that SWU contracts do not demonstrate any intention to vest enrichers with ownership rights in either the unenriched or the enriched uranium.[22] The Federal Circuit also relied on an earlier case in which it had accepted the government's position that SWU contracts are for services, not goods. The court reheard the case in light of the Supreme Court's decision in *Nat'l Cable and Telecomms. Ass'n v Brand X Internet Servs.*, 545 U.S. 967 (2005), which held that a court's choice of one reasonable reading of ambiguous statutory language does not prevent an agency from later adopting another reasonable interpretation. The court indicated that its rejection of the first appeal had not been based on the grounds of statutory interpretation, but on its determination that SWU contracts are clearly contracts for services, not goods.[23]

The Supreme Court upheld the Commerce Department's interpretation and its assessment of an anti-dumping tariff. In doing so, the court applied the general rules of statutory construction and also agreed with the Department's reasoning that the true nature of the transaction rather than its contractual label should govern.

The court observed that the anti-dumping statute authorises the Commerce Department to determine what constitutes a sale of goods, and ruled that its interpretation prevails "in the absence of unambiguous statutory language to the contrary or unreasonable resolution of language that is ambiguous".[24] The court reasoned that, especially with regulatory and tax statutes, "form should be disregarded for substance and the emphasis should be on economic reality".[25] The court illustrated this "substance over form" rule with an analogy to a customer who brings dirty shirts to a laundry, who is clearly purchasing cleaning services, not clean shirts, compared to a customer who provides sand and cash to a silicon chip manufacturer, who is clearly buying computer chips, not sand enhancement services.[26]

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19. *USEC, Inc. v United States*, 259 F. Supp. 2d 1310 (Ct. Int'l Trade 2003).

20. *Eurodif*, 129 S.Ct. at 885.

21. *Ibid* at 886-87.

22. *Eurodif, S.A. v United States*, 411 F.3d 1355 (2005) *(Eurodif I)*.

23. *Eurodif, S.A. v United States*, 423 F.3d 1275 (2005) *(Eurodif II)*.

24. *Eurodif*, 129 S.Ct. at 886.

25. *Ibid* at 887 (internal quotations and citations omitted).

26. *Ibid* at 888.

Having ruled that the substance of the transaction was decisive, the court found Commerce's interpretation "reasonable" for two reasons. First, the LEU purchaser provides "a fungible commodity that is not tracked after its delivery to the enricher, in exchange for a product owned by the enricher".[27] Second, the enrichment process "results in a substantial transformation of the unenriched uranium".[28] The court agreed with the Commerce Department's determination that when "a constituent material is untracked and fungible, ownership is usually seen as transferred," it is a sale of goods rather than a sale of services.[29] Further, the court feared that permitting the interpretation of SWU contracts as sales of services would lead to trade practices evading coverage under the antidumping laws. The court noted that even the EUP contract, admittedly a sale of goods, could be restructured into two transactions – "one contract to buy unenriched uranium and another to enrich it".[30] If this were allowed, according to the court, "contracts for imported pasta would be replaced by separate contracts for wheat and wheat processing services, [and] sweater imports would give way to separate contracts for wool and knitting services".[31] In these circumstances, the court believed that the anti-dumping statutes would apply only to "uncreative" merchants who had not restructured their contracts as separate trades for raw materials and processing services.[32]

Judgment of the U.S. Supreme Court on the use of cost-benefit analysis in determining the best technology available for minimising the adverse environmental effects of cooling water intake structures (2009)

This case concerns the regulation of cooling water intake structures by the U.S. Environmental Protection Agency (EPA) pursuant to the Clean Water Act. In the U.S. Supreme Court, petitioner Entergy Corp. sought review of a ruling by the U.S. Court of Appeals for the Second Circuit that set aside EPA's regulations issued pursuant to § 316(b) of the Clean Water Act,[33] which permitted use of cost-benefit analysis in determining the best technology available to minimise the adverse environmental impact of cooling water intake structures. The Supreme Court reversed the decision of the Second Circuit with respect to the permissibility of cost-benefit analyses and remanded the case.[34]

Power plants, including those owned and operated by petitioners, use cooling water intake structures to cool their facilities. The structures draw water from nearby sources, but can adversely affect the environment, particularly through the impingement and entrainment of aquatic life in their mechanical components. The EPA, pursuant to the Clean Water Act, promulgated regulations for determining the best technology available for minimising the adverse impact of cooling water intake structures. While these determinations had been made on a case-by-case basis for years, in 2001 the EPA issued the first of several regulations intended to govern new, large cooling water intake structures.[35] These regulations require new facilities taking in more than 10 million gallons per day to

27. *Ibid* at 888.

28. *Ibid* at 889.

29. *Ibid.*

30. *Ibid* at 890.

31. *Ibid.*

32. *Ibid.*

33. 33 U.S.C. § 1326(b).

34. *Entergy Corp. v Riverkeeper, Inc.*, 129 S.Ct. 1498 (1 April 2009).

35. National Pollutant Discharge Elimination System: Regulations Addressing Cooling Water Intake Structures for New Facilities, 66 Fed. Reg. 65256 (18 December 2001).

restrict their intake to the level which could be attained "by a closed-cycle re-circulating cooling water system". The regulations provide for alternative methods of compliance for facilities taking in 2 to 10 restrict their intake to the level which could be attained "by a closed-cycle re-circulating cooling water million gallons per day.[36]

Subsequently, in 2004 the EPA issued its second stage of regulations; these regulations, the "Phase II" rules, are at issue in this case.[37] The Phase II rules apply to existing facilities that are point sources, whose primary function is generation and transmission of electricity, and whose water intake exceeds 50 million gallons of water per day. These regulations require the facilities subject to them to meet new national performance standards for reduction of impingement and entrainment of aquatic life. In adopting these new rules, the EPA declined to mandate the implementation of closed-cycle cooling systems, as were required in the first-stage regulations, instead allowing facilities to use a mix of "commercially available and economically practicable" technologies to meet the regulatory targets. The rationale for this decision included consideration of the high costs of converting existing facilities and the availability of using other technology to meet the new standards, and the fact that implementation of closed-cycle cooling would reduce electrical generating capacity, requiring the construction of additional plants to meet electricity needs.[38] Thus, the EPA concluded that the benefits of complying with the national performance standards through methods other than closed-cycle cooling could produce similar results at less cost.

The Phase II regulations also permit issuance of variances from the national performance standards if a facility can demonstrate that the costs of compliance are significantly greater than those considered by the EPA, or that the costs of compliance would be significantly greater than the benefits.[39]

Respondent states and environmental groups challenged EPA's regulations in Federal Court, and the Court of Appeals for the Second Circuit remanded the regulations to EPA. The court concluded that the only ways in which EPA could consider costs under § 316(b) of the Clean Water Act were (1) in determining whether the costs of remediation could be "reasonably borne" by the industry, and (2) in determining which remedial technologies are the most cost-effective.[40] However, the court determined that § 316(b) does not permit a cost-benefit analysis that would compare the costs and benefits of various outcomes and select the outcome with the best net benefit.[41] The court held that the cost-benefit variance provision of the regulations was unlawful, and remanded to the EPA for clarification on whether that provision involved an impermissible cost-benefit analysis or a cost-effectiveness analysis.

The Supreme Court upheld the EPA's reliance on cost-benefit analysis in determining national performance standards and in permitting cost-benefit variances from those standards. In doing so, the court applied the general rules of statutory construction and the *Chevron* standard of deference granted to an agency's reasonable statutory interpretation under the court's jurisprudence.[42]

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36. *Entergy*, 129 S.Ct. at 1503.

37. National Pollutant Discharge Elimination System--Final Regulations to Establish Requirements for Cooling Water Intake Structures at Phase II Existing Facilities, 69 Fed. Reg. 41576 (9 July 2004).

38. *Entergy*, 129 S.Ct. at 1503.

39. *Ibid* at 1504-05.

40. *Ibid.*

41. *Ibid.*

42. *Chevron U.S.A. Inc. v Natural Resources Defense Council*, Inc., 467 U.S. 837, 843-844, 104 S.Ct. 2778 (1984).

The court first recognised that the "best technology available" provision of the statute bears more than one plausible interpretation. While the Second Circuit took the language to mean that facilities must use "the technology that achieves the greatest reduction in adverse environmental impacts at a cost that can reasonably be borne by the industry," another reasonable interpretation is that the phrase refers to the technology "that *most efficiently* produces some good".[43] The court also observed that the phrase "best technology available for minimising adverse environmental impacts" includes subjective language – the words "best" and "minimise" – in such a way that it does not unambiguously prohibit a cost-benefit analysis.[44]

The court next reviewed other effluent limitation standards used in the Clean Water Act over the course of the act's history: (1) best practicable control technology, (2) best available technology economically achievable, (3) best conventional-pollutant control technology, (4) best available demonstrated control technology, and (5) best technology available for minimising adverse environmental impact.[45] The court noted that although only two of the first four tests authorise cost-benefit analysis, all four of the original tests permit some level of cost consideration.[46] The respondents had argued that § 316(b)'s silence on the subject of cost-benefit analysis necessarily meant that such analysis was prohibited. The court reasoned, however, that if the statute's silence prohibits cost-benefit analysis, then it must necessarily also prohibit any cost consideration whatsoever, which could not logically or reasonably be the case.[47] In making this argument, the court relied on the proposition that, under the *Chevron* deference scheme, the fact that an agency is not required to do something does not mean that it is not permitted to do it.[48] Using all these considerations, the court concluded that EPA's interpretation of the Clean Water Act to permit cost-benefit analysis was reasonable, and therefore permissible.

The court also examined the EPA's definition of the national performance standards, which included a consideration of the costs of closed-cycle cooling and alternative technologies, along with an estimate of the approximate monetary benefit to reducing impingement and entrainment of aquatic life.[49] The court argued these considerations show that the EPA's practice of weighing costs and benefits is a "reasonable and … legitimate exercise of its discretion".[50] EPA had historically interpreted § 316(b) to permit some degree of cost-benefit analysis, determining in 1977 that the section does not require use of technology "whose cost is wholly disproportionate to the environmental benefit to be gained".[51]

Finally, the court observed that the Second Circuit, in separate action upholding the Phase I regulations, and even the respondents in this case, acknowledge that the Clean Water Act need not be interpreted so strictly as to require facilities to spend billions of dollars on improved cooling technology that would have little or no environmental benefit.[52]

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43. *Entergy*, 129 S.Ct. at 1505-08.
44. *Ibid* at 1506.
45. *Ibid* at 1506-08.
46. *Ibid* at 1508.
47. *Ibid.*
48. *Ibid.*
49. *Ibid* at 1509.
50. *Ibid* at 1509.
51. *Ibid.*
52. *Ibid.*

National Legislative and Regulatory Activities

Belgium

Radiological protection

Amendments to the Law on the protection of the population and the environment against the dangers arising from ionising radiation and concerning the Federal Agency for Nuclear Control (2009)

Two amendments[1] to the law are worth noting:

One amendment changes the funding of the activities of the Federal Agency for Nuclear Control (FANC) whereby part of the fees is transformed into taxes. Besides taxes, fees and administrative fines, funding is possible by means of donations, legacies and extra fees.

Another amendment provides a legal foundation for the assignment of certain activities to Bel V, an affiliate of FANC. Bel V performs, under the responsibility of FANC, specific tasks as stipulated in Article 28 of the Law of 15 April 1994 on the protection of the population and the environment against the dangers arising from ionising radiation and concerning FANC. These tasks are entirely, or partially, related to the continuous supervision of the proper execution of the tasks assigned to the physical control services which the manager is obliged to establish. They are also related to the licensing of new installations and to the approval of certain decisions of the physical control service.

With regard to the transport of special fissile products, FANC can charge Bel V with the permanent supervision of the loading, transport and delivery of those products.

Transport of radioactive materials

Regulation on the import, transport and export of radioactive substances (2009)

Royal Decree of 24 March 2009,[2] replaces former Chapter IV of the Royal Decree of 20 July 2001 concerning the import, export, transport and distribution of radioactive substances. It implements Council Directive 2006/117/Euratom of 20 November 2006 on the supervision and control of shipments of radioactive waste and spent fuel.

For radioactive substances which are not covered by the Council Directive 2006/117/Euratom, the Royal Decree simplifies the rules applicable to the import. It provides that “licences required in the old regulations are replaced by a registration of the importer, no licence requirements for the import of non sealed sources after registration, the use of the 1493/93 uniform document as sole import licence

1. Law of 22 December 2008, published on 29 December 2008 and entered into force on 1 January 2009.

2. Published on 17 April 2009 and entered into force on 27 April 2009.

for sealed sources from other EU member states, acceptance of the quarterly report required in the 1493/93 regulation instead of monthly reports. Sealed sources from outside the EU and fissile materials are also subjected to an import licence".

Brazil

General Legislation

New national defence strategy (2008)

The use of nuclear energy for peaceful purposes is reaffirmed in the new national defence strategy, approved by Decree No. 6.703 of 18 December 2008,[3] which considers the fact that Brazil owns a fleet of nuclear powered submarines as a strategic issue in order to protect its territorial waters and offshore platforms. To this end, the objective of the Brazilian navy is to commission its first nuclear powered submarine for 2020.

With respect to the use of nuclear energy, the commitments of the national defence strategy state that "Brazil is committed to the use of nuclear energy for strictly peaceful purposes pursuant to the Federal Constitution and the Treaty on the Non-Proliferation of Nuclear Weapons (NPT)".

It further affirms the strategic necessity to develop and control nuclear technology. Brazil will strive to guarantee access to the development of nuclear energy. However, Brazil will not adhere to additional provisions of the NPT whose purpose would increase the number of restrictions, as long as nuclear weapon states do not pursue their nuclear disarmament obligations.

France

Transport of radioactive materials

Decree on the transboundary transfer of radioactive waste and spent nuclear fuel (2008)

This decree (No. 2008-130 of 19 December 2008) modifies Section 6 of Chapter II of the Environmental Code which deals with the import, export, transit and transfer of radioactive waste and spent nuclear fuel within national territory. It transposes Council Directive 2006/117/Euratom of 20 November 2006 on the supervision and control of shipments of radioactive waste and spent fuel.

The new provisions in Section 6 now apply to both radioactive waste and spent nuclear fuel.

The following activities are nevertheless excluded:

- The transfer of spent or disused sealed sources, regulated in Article R. 1333-52 of the Code of Public Health.

- The transfer of radioactive waste or spent nuclear fuel once treated for re-use.

3. Published in the *Official Journal* of the 19 December 2008.

- The transfer of waste containing only natural radioactive materials that have not been used.

With regard to the import of radioactive materials from a member state of the European Union, the Minister of Energy shall acknowledge receipt to the competent authorities of the member state of origin within 30 days after the application has been received. Furthermore, within two months after the date of acknowledgement of receipt, it will be assumed that the Minister of Energy has given his consent.

The minister must justify any decision to refuse an application. The justification shall be based either on French legislation applicable to materials and waste management or French, European or international legislation which is applicable to the transport of radioactive materials.

Moreover, the decree provides that whenever the Minister of Energy has given his approval to the export of radioactive waste or spent nuclear fuel or to a transfer including a transit on the national territory, it implies that the return of these materials has also been permitted:

- When the initial approval was given with regard to the transfer of materials for processing purposes, as long as the return involves radioactive waste or materials similar to the initial materials after processing and only if the transfer is in compliance with all applicable provisions.

- If the return is carried out under the same conditions and with the same specifications respecting all applicable legal formalities.

Ireland

General legislation

Nuclear Test Ban Act (2008)

The Nuclear Test Ban Act 2008 will provide the legislation needed to enable Ireland to implement its obligations under the Comprehensive Nuclear-Test-Ban Treaty. This treaty was signed by Ireland in September 1996 and ratified in 1999. It requires each contracting party to take the necessary measures to prohibit the carrying out by any person anywhere on its territory or any place under its jurisdiction of a nuclear weapons test explosion or any other nuclear explosion. The treaty also recognises that constraints on the development and improvement of nuclear weapons constitute an effective means of nuclear disarmament and non-proliferation.

The Radiological Protection Institute of Ireland is designated as the national authority in the state for the purposes of this act and the treaty. The act was signed by the President on 16 July 2008.

Japan

Third party liability

Act to amend the Nuclear Damage Compensation Law and the Law on Nuclear Liability Indemnification Contracts (2009)

The legislation to amend the Nuclear Damage Compensation Law and the Nuclear Liability Indemnification Contract Law was adopted on 13 April 2009, published on 18 April 2009 and shall enter into force on 1 January 2010.

The amendment was based on the first report prepared by the Nuclear Liability System Review Committee, which focused on making the system more functional, following the criticality accident of 1999 at a conversion facility in Tokaimura. The revision is as follows:

(1) Ten year extension of temporary provisions

The temporary provisions of the governmental assistance to nuclear operators and the governmental indemnification contracts were extended for ten years.

(2) Increasing the amount of financial security

The amount of financial security was doubled from 60 billion yen[4] to 120 billion yen.[5]

(3) Promoting out-of-court settlement of disputes

The function of establishing guidelines for promoting out of court settlements was assigned to the nuclear damage compensation dispute examination board.

(4) Partial outsourcing of the governmental reimbursement operation

Indemnity reimbursement operations under the governmental indemnification contract may be outsourced to insurance companies.

The Nuclear Liability System Review Committee continues to carry out further reviews and will release a report by December 2009 comprising both a manual for prompt and appropriate settlement of compensation and nuclear liability treaties.

4. Approximately EUR 452 million; USD 626 million (as of 22 June 2009).

5. Approximately EUR 904 million; USD 1.25 billion (as of 22 June 2009).

Republic of Korea

Radioactive waste management

Act on Radioactive Waste Management (2009)

An unofficial translation of the act is reproduced under texts following this chapter.

A new Korean Law on Radioactive Waste Management entered into force on 1 January 2009 (Code 9016). The aim of the act is to unify the many existing radioactive waste laws and codes and to apply systematic and effective policies in this area.

The act consists of six chapters on general rules, policy making, the management of radioactive waste, co-operation in this field, the creation of funds for the financing of radioactive waste management projects and a final chapter with supplementary rules. Based on the act, the Korean Radioactive Waste Management Corporation (KRMC) was established on 2 January 2009 as an independent government agency for the safe and more efficient management of radioactive waste generated in Korea. It will be in charge of the construction and operation of a disposal facility for low-level and intermediate-level radioactive waste, the management of spent nuclear fuel and research-related activities.

Together with the act, the President's Ordinance on the Radioactive Waste Management Act (Order 21181, adopted on 24 December 2008) entered into force on 1 January 2009. It prescribes the implementation of the act in detail, its main provisions addressing delivery procedures and methods of radioactive waste management, the levying of costs as well as the management and operation of the radioactive waste management fund.

Republic of Moldova

General legislation

Latest legislative activities (2009)

The Republic of Moldova joined a number of nuclear energy conventions/treaties, namely:

1. Convention on Early Notification of a Nuclear Accident.
2. Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency.
3. Convention on Nuclear Safety.
4. Convention on the Physical Protection of Nuclear Material.
5. Vienna Convention on Civil Liability for Nuclear Damage.
6. International Convention for the Suppression of Acts of Nuclear Terrorism.
7. Treaty on the Non-Proliferation of Nuclear Weapons.

8. Agreement between the Government of the Republic of Moldova and the International Atomic Energy Agency for the application of safeguards in connection with the treaty on the Non-Proliferation of Nuclear Weapons

There are no nuclear power plants or reactors in the Republic of Moldova. The sealed and unsealed radiation sources are used in medicine, research and industry. Until June 2006, the provisions applicable to nuclear activities in the Republic of Moldova were set out in the Law on Radiation Protection and Nuclear Security, No. 1440-XIII of 24 December 1997.

In order to strengthen the legal framework governing radiological protection and to establish an independent regulatory authority, Moldova revised its 2006 Law on the safe deployment of nuclear and radiological activities.[6] The act provides, *inter alia*, for the establishment of the National Agency for Regulation of Nuclear and Radiological Activities (NARNRA or National Agency), a regulatory authority envisaged by Governmental Decree of April 2007.[7]

The National Agency was created and funded by the government. Technical assistance and support was provided by the International Atomic Energy Agency (IAEA) and by the Nuclear Regulatory Commission (NRC) of the United States of America. It is a central public authority under the aegis of the Ministry of Ecology and Natural Resource and is effectively independent from organisations involved in the promotion or operation of nuclear facilities and activities. It is structured and developed to correspond to the potential magnitude and nature of the hazards it controls and comprises separate divisions on evaluation and licensing, regulatory policy, inspection, planning and financing and legal and personnel matters.

After its creation, the agency focused its activities on:

- Staffing with appropriately qualified and competent personnel.
- Developing legislation to implement the international conventions and treaties to which the Republic of Moldova is a party and to ratify the additional agreements and conventions.
- Developing regulations and guides to address safety principles, requirements and associated criteria upon which regulatory decisions are to be based.
- Developing and implementing a programme of inspecting facilities and activities to confirm compliance with licences and safety requirements.
- Establishing and maintaining a register of radiation source and facilities.
- Establishing the procedure for licensing, review and assessment of nuclear and radiological activities.
- Developing and implementing an enforcement policy, compatible with its national legal system, to ensure licensee compliance with licence conditions and safety requirements.

6. Published in the Official Monitor of the Republic of Moldova No. 98-101/451 of 30 June 2006. A short description of the mentioned law was published in *Nuclear Law Bulletin* No. 78.

7. Published in the Official Monitor of the Republic of Moldova No. 53/484 of 17 July 1997.

- Establishing appropriate means of informing and consulting interested parties and the public about the safety aspects of facilities and activities and about regulatory processes.

- Developing international co-operation.

- Developing co-operation with national authorities.

NARNRA has so far prepared the following laws and regulations:

1. Law No. 20-XVI of 21 February 2008 on ratifying the Convention for the Suppression of Acts of Nuclear Terrorism.[8]

2. Law No. 85 of 24 April 2008 on ratifying the Amendment to the Convention on the Physical Protection of Nuclear Material.[9]

3. Governmental Decree No. 1017 of 1 September 2007 on a national register of radiation sources and of authorised physical and natural persons.[10]

4. Governmental Decree No. 1220 of 30 October 2008 on approving the procedure for state control and supervision.[11]

5. Governmental Decree No. 212 of 13 March 2009 on approving the procedure for licensing nuclear and radiological activities.[12]

The following draft laws and decrees are expected to be approved soon:

1. Draft Law on Ratifying the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management.

2. Draft Presidential Decree on Approving the Amendments to the Protocol annexed to the Agreement between the Government of the Republic of Moldova and the International Atomic Energy Agency for the application of safeguards in connection with the Treaty on the Non-Proliferation of Nuclear Weapons.

3. Draft Governmental Decree on Approving the Regulation on safe management of radioactive wastes.

The National Agency has developed fruitful international co-operation with the IAEA as well as with the U.S. Nuclear Regulatory Commission (NRC) and the Department of Energy. Co-operation was initiated with the European Commission (EC), with the National Regulatory Authority of Romania and with regulatory authorities of other countries.

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8. Published in the Official Monitor of the Republic of Moldova No. 51-54 of 21 February 2008.

9. Published in the Official Monitor of the Republic of Moldova No. 85/XVI of 24 April 2008.

10. Published in the Official Monitor of the Republic of Moldova No. 169-170/1025 of 9 September 2008.

11. Published in the Official Monitor of the Republic of Moldova No. 198/200/1231 of 7 November 2008.

12. Published in the Official Monitor of the Republic of Moldova No. 59-61/271 of 24 March 2009.

In the future, NARNRA's main objectives will be to develop additional regulations and guides as well as to improve regulatory performance, effectiveness and quality to meet relevant international requirements and guides.

Romania

Regime of radioactive materials (including physical protection)

Decision on the national strategy for state defence (2008)

The Government Decision[13] regarding approval of the national strategy for state defence includes references to fighting against terrorism and the proliferation of weapons of mass destruction.

National defence also extends to protecting the environment by assuring, *inter alia*, proper radioactive waste management and the security of decommissioned nuclear installations. As regards national nuclear security, it will be achieved by meeting the conditions necessary for the nuclear and radiological security of all related activities.

Radioactive waste management

Order on the supervision and control of international shipments of radioactive waste and spent nuclear fuel (2008)

The order on the approval of the norms on the supervision and control of international shipments of radioactive waste and spent nuclear fuel[14] was issued by the President of the National Commission for Nuclear Activities Control. This order, which shall be carried out by the Commission, effectively transposes Council Directive 2006/117/Euratom on the supervision and control of shipments of radioactive waste and spent fuel (see *Nuclear Law Bulletin* No. 79) into national law, including prescribing a system of control and prior authorisation for shipments of radioactive waste and spent nuclear fuel, a compulsory system of notification and a standard control document.

Serbia

General legislation

New comprehensive act on nuclear energy (2009)

On 12 May 2009, the Parliament of the Republic of Serbia adopted the Act on Ionizing Radiation Protection and Nuclear Safety.

The act sets out measures for the protection of human life, public health and the environment against the harmful effects of ionizing radiation. It provides nuclear safety measures for all procedures

13. No. 30/2008 published in the Official Journal of Romania, Part I No. 799 of 28 November 2008.

14. No. 443/2008 published in the Official Journal of Romania, Part I No. 797 of 27 November 2008.

relevant to nuclear activities and radioactive waste. Exposure to natural ionizing radiation originating from space, the earth's crust and the human body is not within the scope of this law if it has not been altered by human activities.

The new act aims at modernising and harmonising national legislation with international standards and requirements so that nuclear issues which are of interest for the Republic of Serbia are covered comprehensively. In addition the act provides for the establishment of an independent regulatory authority, the Agency for Radiation and Nuclear Safety, to be responsible for radiological protection, nuclear safety and radioactive waste management.

The act will

- introduce modern, generally accepted legal and technical terminology;
- prescribe legal conditions for the decommissioning of nuclear facilities;
- provide for transparency in the work of regulatory and other authorities;
- allow for the adoption of a programme of radiological protection, nuclear safety and security and radioactive waste management;
- provide for long-term plans and goals and institute a system of control over nuclear facilities and materials in compliance with internationally accepted standards and principles and international obligations;
- strengthen controls over the use of ionizing radiation sources, the carrying out of nuclear and radiation related activities, and the transfer, trade and transportation of radioactive and nuclear materials, including during import, export and transit;
- provide additional education and training in radiation protection to those who are professionally exposed and to those responsible for ionizing radiation protection.

The Act on Ionizing Radiation Protection and Nuclear Safety entered into force on 23 May 2009.

Slovenia

Radioactive waste management

Regulation on the transboundary shipments of radioactive waste and spent fuel (2009)

This regulation, adopted by the Minister of the Environment and Spatial Planning on 16 March 2009 (published in the Official Gazette No. 22/09), transposes Council Directive 2006/117/EURATOM of 20 November 2006 on the supervision and control of shipments of radioactive waste and spent fuel into Slovenian legislation. The regulation's final provision determines that, upon entry into force, it replaces the Regulation on Shipment of Radioactive Waste into and out of the European Union (see *Nuclear Law Bulletin* No. 75).

Transport of radioactive materials

Regulation on the transboundary shipments of nuclear and radioactive substances (2008)

This regulation was adopted by the Minister of the Environment and Spatial Planning on 7 July 2008 and was published in the Official Gazette No. 75/08. It determines the contents of an application for, and the conditions for issuing a licence to, import or export nuclear or radioactive substances, transfer nuclear substances from (to) the European Union member states and transit nuclear substances and radiation sources with significant activity. It also determines methods of informing competent domestic ministries and other bodies of third countries, a course of conduct in case of several shipments and other conditions regarding nuclear and radiation safety.

The regulation has been in force since 1 October 2008.

Switzerland

Organisation and structure

New Federal Nuclear Safety Inspectorate (2009)

At the beginning of 2009, the Principal Nuclear Safety Division HSK ("Hauptabteilung für die Sicherheit der Kernanlagen") was transformed into an independent institution under public law named Swiss Federal Nuclear Safety Inspectorate ENSI. The law governing the new inspectorate, the ENSI Act, was adopted by Parliament in 2007.

The inspectorate formerly was a division of the Federal Office for Energy (SFOE). The creation of ENSI followed a debate on the effective separation of the regulatory body and any other body or organisation concerned with the promotion or utilisation of nuclear energy. It brings Switzerland *de facto* and *de jure* in full compliance with the Convention on Nuclear Safety (Article 8 paragraph 2) and the Swiss Nuclear Energy Act.

ENSI is vested with operational, institutional and financial independence. The Director reports to the ENSI Board which in turn is accountable to the Federal Council to whom it must submit an annual report. The Federal Council elected the members of the ENSI Board and Dr. Peter Hufschmied became its first Chairman.

The ENSI legislation also amends the Nuclear Energy Act by replacing the Commission for the Safety of Nuclear Facilities (KSA) with the Commission for Nuclear Safety (KNS). KNS is an advisory body that issues advice to the Federal Council, the Department of the Environment, Transport, Energy and Communications and ENSI on fundamental questions of nuclear safety. It comments on the safety reports issued by ENSI and is involved in drafting future legislation on nuclear safety.

Turkey

General Legislation

Developments since the adoption of the Law on the Construction and Operation of Nuclear Power Plants[15] *(2009)*

The Law on Construction and Operation of Nuclear Power Plants and Energy Sale (Law No. 5710) provides for the procedures and principles regarding the construction and operation of nuclear power plants for electricity production and energy sale in accordance with national energy plans and policies, published in the Official Gazette dated 21 November 2007 (unofficial translation published in *Nuclear Law Bulletin* No. 80). According to the above mentioned law, until 24 September 2008, bids were to be submitted for the sale of electricity produced by nuclear power plant (NPP) units at the Akkuyu Site. The consortium comprised of Russian Atomstroyexport and Inter Rao along with Turkey's Park Teknik Group was the sole bidder. The bid submitted by this consortium is still being evaluated by Turkish Electricity Trading and Contracting Company (TETAS), which held the competition for selling electricity generated by nuclear power plants.

Recently, the Turkish Atomic Energy Authority (TAEK) issued a draft nuclear law which is being revised according to stakeholders' input. It is expected to enter into force in 2010. The current Law on the Turkish Atomic Energy Authority (Law No. 2690) will become void when the new nuclear law is enacted.

The objective of the new law is to address issues relating to the peaceful uses of nuclear energy and ionizing radiation, including:

a) The principles which should be complied with and implemented in order to ensure safety and security in relevant applications by protecting individuals, society and the environment from harmful effects of ionizing radiation.

b) The authorities and responsibilities of the regulatory body and persons, bodies and institutions, both public and private, which are engaged in activities related to research and promotion.

c) The establishment, functions, authority and responsibilities of the nuclear regulatory body which will be regulating the activities.

d) The establishment, commissions, authority and responsibilities of the Turkish Atomic Energy Authority which will be executing activities related to research and technological development and implementation.

The scope of the draft nuclear law will extend to all activities relating to nuclear and radiation facilities, devices and materials excluding those involving non-ionizing radiation.

As to secondary legislation, the Decree and Regulation on Radiological Safety are both in force and cover basic safety standards for the protection of the health of workers and for the security of the general public against the dangers arising from ionizing radiation. However, a draft decree on

15. Kindly submitted by Yurdagül Önal, Damla Cihan, Hakan Oygur from the Turkish Atomic Energy Authority.

radiation protection which is under development will revoke the regulation and revise the decree to include the safety aspects of utilizing ionizing radiation, following which relevant technical and administrative arrangements will be put in place. The Ministry of Health intends to adopt a Basic Law on Medical Radiation to cover diagnosis and treatment related exposure to radiation and the relevant provisions of the Code of Practice on Rehabilitation by Radiology, Radium and Electricity are now being updated. A Regulation on Radiation Applying Medical Institutions will also be adopted to set forth the required qualifications for such institutions and the penalties for failure to comply therewith. A new Regulation on Medical Radiation Workers will prescribe the qualifications for medical radiation workers and the principles for their protection from radiation. Finally, a Regulation on Devices Used in Medical Radiation will be put in place to ensure that such devices are properly maintained and controlled. Finally, a draft regulation on the protection of outside workers from ionizing radiation should be finalised soon.

Additionally, TAEK is preparing a Regulation on the Safe Transport of Radioactive Materials, taking into consideration the "IAEA Safety Standards Regulations for the Safe Transport of Radioactive Material (TS-R-1)". Arrangements to implement this regulation are now being made with relevant ministries, public bodies and other entities. TAEK also participates in the IAEA's Transport Safety Standards Committee and sub-committee meetings.

Changes are also being made to the Regulation on national implementations in the case of a nuclear or radiological emergency which sets forth the responsibilities of relevant ministries and other institutions in such events. The changes, which were published on 17 February 2009 in the Official Gazette, aim to regulate activities designed to protect the health and security of both the general public and the environment.

In the area of nuclear safety and security, draft decrees setting out basic safety and security objectives and principles for nuclear installations and materials have been adopted by the Atomic Energy Commission. These have been prepared taking into consideration the relevant *acquis communautaire* as far as possible.

The following regulations on nuclear safety entered into force between January 2008 and March 2009:

- Regulation on Specific Safety Principles for Nuclear Power Plants (OG 27027 of 17 October 2008).
- Regulation on Design Principles for Safety of Nuclear Power Plants (OG 27027 of 17 October 2008).
- Regulation Amending the Regulation on Nuclear Safety Inspection and Enforcement (OG 27034 of 24 October 2008).
- Regulation Amending the Regulation on Basic Requirements for Quality Management for Safety of Nuclear Installation (OG 27144 of 17 February 2009).
- Regulation on Unusual Event Notification and Reporting for Research Reactors (OG 27144 of 17 February 2009).
- Regulation on Specific Safety Principles for Research Reactors (OG 27144 of 17 February 2009).

- Regulation on Registration and Reporting for Research Reactors (OG 27144 of 17/02/2009).

United States

Regime of nuclear installations

Power reactor security requirements (2009)

On 27 March 2009, the U.S. Nuclear Regulatory Commission issued amendments to its security requirements for new and operating reactors.[16] The rule became effective on 26 May 2009, and compliance for currently licensed operating reactors is required by 31 March 2010.

The new rule was issued to enhance security requirements in response to the terrorist attacks of 11 September 2001. Among other things, it codifies requirements similar to those imposed on power reactor licensees through a series of four security orders issued to licensees in 2002 and 2003.[17]

In addition to addressing and revising existing security requirements at nuclear power plants, a number of new security requirements are included in the amended rules. Licensees are now required to manage and assess the potential conflicts between security activities and other plant activities that could compromise plant security or safety.[18] The amendments also create a new section which imposes a new requirement for licensees who propose to use Mixed-Oxide (MOX) fuel in concentrations at or below 20 percent to protect MOX fuel from theft or diversion.

Perhaps most significantly, a new regulation was issued imposing cyber security measures. Section 73.54 is intended to ensure that digital computer and communication systems and networks will be adequately protected against cyber attacks up to and including the design basis threat established in § 73.1(a)(1)(v). The section requires that new applications include cyber security plans, and further mandates currently operating licensees to submit cyber security plans to the NRC for review and approval by November 2009.

The amendments also create new requirements for licensees to develop and maintain mitigative strategies and response procedures for potential or actual aircraft crashes. A new Section § 50.55(hh) creates a framework for applying NRC requirements for preparatory actions to be taken in the event of a potential or actual aircraft attack and mitigation strategies for loss of large areas of the facility due to fire or explosion resulting from a design basis or beyond design basis event.

Further, the amendments have updated the NRC's access authorisation programme requirements.[19] The rule includes new requirements for individuals who have electronic means to

16. Power Reactor Security Requirements, 74 Fed. Reg. 13926 (27 March 2009).

17. EA-02-026, "Interim Compensatory Measures (ICM) Order," issued 25 February 2002 (4 March 2002; 67 Fed. Reg. 9792); EA-02-261, "Access Authorization Order," issued 7 January 2003 (13 January 2003, 68 Fed. Reg. 1643); EA-03-039, "Security Personnel Training and Qualification Requirements (Training) Order," issued 29 April 2003 (7 May 2003; 68 Fed. Reg. 24514); EA-03-086, "Revised Design Basis Threat Order," issued 29 April 2003 (7 May 2003; 68 Fed. Reg. 23517).

18. 10 C.F.R. § 73.58.

19. 10 C.F.R. § 73.56.

adversely impact facility safety, security, or emergency preparedness and enhancements to the psychological assessments standards. It also calls for requirements with regard to expanded behavioural observation and such with regard to reinvestigations of criminal and credit history records for all individuals with unescorted access and five-year psychological reassessments for certain job functions.

Appendix B to Part 73 includes modifications to training and qualification programme requirements for both armed and unarmed security personnel to meet minimum physical conditions commensurate with their duties. Other additional requirements include a minimum age of 18 years for unarmed security officers (the rule continues to require that armed security officers be at least 21 years old), enhanced minimum qualification scores for testing as stipulated in the training and qualification plan, enhanced qualification for security trainers, armoury certification requirements, programme requirements for on-the-job training and the necessary qualification for drill and exercise controllers.

Finally, the new rule imposes physical security enhancements, including a requirement that the central and secondary alarm stations have functionally equivalent capabilities.[20] Also, the rule adds requirements for new reactor licensees to locate the secondary alarm station within a site's protected area, ensure that the station is bullet resistant and limit visibility into the station from the protected area's perimeter. Finally, the enhancements include requiring uninterruptible backup power supplies for detection and assessment equipment, video image recording capability and new requirements for protection of the facility against waterborne vehicles.

Amendment to NRC Regulations with regard to Aircraft Impact Assessment (2009)

The U.S. Nuclear Regulatory Commission has amended its regulations to require applicants for new nuclear power reactor licences and new reactor designs to perform a design-specific assessment of the effects of the impact of a large, commercial aircraft. These amendments require the applicant to use realistic analyses to identify and incorporate design features and functional capabilities to ensure, with reduced use of operator actions, that either the reactor core remains cooled or the containment remains intact, and that either spent fuel cooling or spent fuel pool integrity is maintained. In addition, these amendments contain requirements for controlling changes to any design features or functional capabilities credited for avoiding or mitigating the effects of an aircraft impact.

The final rule[21] provides a description of the aircraft characteristics that are required to be used to perform the design-specific assessment of the effects of the impact of a large, commercial aircraft. Guidance documents will contain detailed information on aircraft impact parameters that the NRC considers appropriate for use in aircraft impact assessments. This detailed information will only be made available to those with a need to know who meet the NRC's requirements for access to such information.

The objective of this rule is to require nuclear power plant designers to perform a rigorous assessment of the design to identify design features and functional capabilities that could provide additional inherent protection to withstand the effects of an aircraft impact.

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20. 10 C.F.R. § 73.55(i).

29. The final rule comes into effect on 13 July 2009. It has been published in the Federal Register, available at http://edocket.access.gpo.gov/2009/pdf/E9-13582.pdf.

Radioactive waste management

Dose standard after 10 000 years for high level waste disposal at Yucca Mountain (2009)

On 13 March 2009, the U.S. Nuclear Regulatory Commission (NRC) amended its regulations governing the disposal of high-level radioactive waste at the proposed repository at Yucca Mountain, Nevada, to implement the U.S. Environmental Protection Agency's (EPA) revised standards for doses that could occur after 10 000 years but within the period of geologic stability.[22] The amendments became effective on 13 April 2009.

The Energy Policy Act of 1992[23] requires the NRC's technical criteria to be consistent with EPA's standards for a geologic repository at the Yucca Mountain site. EPA published a final rule on 15 October 2008, in response to a ruling from the U.S. Court of Appeals for the District of Columbia Circuit[24] that partially vacated earlier standards promulgated by EPA. The 2008 rule sets a dose standard of 1 mSv/yr (100 mrem/yr) for the period 10 000 years to one million years following waste disposal. The standard for the period up to 10 000 years was not disturbed by the federal court and remained 0.015 mSv/yr (15 mrem/yr).

The NRC's final rule serves several purposes. First, it incorporates EPA's 1 mSv/yr (100 mrem/yr) dose limits for the 10 000-year to one million-year period into the individual protection and human intrusion standards.[25] Secondly, it adopts EPA's specification of the arithmetic mean as the basis for determining compliance with the dose limit after 10 000 years.[26] Thirdly, it adopts EPA's requirements for the performance assessment which the U.S. Department of Energy must use in evaluating the repository's behaviour for the period beginning at 10 000 years. The NRC also adopts EPA's constraints for the inclusion of seismic and igneous activity, climate change and general corrosion in the performance assessment for the period beginning at 10 000 years. Fourthly, the rule adopts EPA's specification of the weighting factors to be used for estimating potential radiation exposures for members of the public.[27]

Additionally, the new rule adds a discussion regarding implementation of total effective dose equivalent (TEDE) to 10 C.F.R. § 63.102(o) to clarify that EPA's final weighting factors should be used for dose calculations for workers and the public. The TEDE definition has also been revised to make it consistent with the definition of TEDE provided in 10 C.F.R. Part 20.

Finally, the rule requires the Department of Energy to represent the effects of climate change by assuming constant-in-time climate conditions. This analysis shall commence for the period running from 10 000 years after waste disposal through the period of geologic stability.

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22. Implementation of a Dose Standard After 10 000 Years, 74 Fed. Reg. 10,811 (13 March 2009); Public Health and Environmental Radiation Protection Standards for Yucca Mountain, Nevada, 73 Fed. Reg. 61,256 (15 October 2008).

23. Pub. L. 102-486.

24. *Nuclear Energy Institute v Environmental Protection Agency*, 373 F.3d 1251 (D.C. Cir. 2004).

25. 10 C.F.R. §§ 63.311 & 63.321.

26. 10 C.F.R. § 63.303.

27. 10 C.F.R. § 63.102(o).

Regulations on nuclear trade (including non-proliferation)

Regulatory changes to implement the Additional Protocol to the U.S.-IAEA Safeguards Agreement (2008)

On 23 December 2008, the U.S. Nuclear Regulatory Commission issued a rule amending its regulations to implement the Protocol Additional to the Agreement Between the United States of America and the International Atomic Energy Agency (IAEA) for the Application of Safeguards in the United States of America (additional protocol).[28] The amendments became effective on 23 December 2008.

The United States Additional Protocol Implementation Act assigned the President responsibility for implementing the act and the additional protocol. The President, therefore, issued Executive Order 13458,[29] which, among other things, assigned to the NRC the responsibility for implementing the additional protocol at NRC and agreement state licensees. The additional protocol requires the United States to report information on various nuclear fuel cycle related activities to the IAEA and, upon request, to provide the IAEA with access to these activities in the U.S. The protocol excludes locations, information and activities determined by the U.S. Government to be of direct national security significance.

The additional protocol requires the United States to provide the IAEA with information on or access to activities previously not covered by the agreement, including the following:

(1) Information about and access to nuclear fuel cycle-related locations for which access is not already provided under the safeguards agreement. Categories of locations include uranium mines and ore concentrate storage installations.

(2) Information on and short-notice access to all buildings on the sites of facilities selected by the IAEA from the U.S. Eligible Facilities List.

(3) Access for collection of environmental samples at locations where such sampling is specifically authorised by the U.S. Government.

(4) Information on research and development and manufacturing activities related to the nuclear fuel cycle.

(5) Expanded reporting of exports and imports of specific equipment and non-nuclear material.

Rule amending regulations for the protection of safeguards information (2008)

On 24 October 2008, the U.S. Nuclear Regulatory Commission published amendments to its regulations governing the protection of safeguards information (SGI) from inadvertent release and unauthorised disclosure.[30] The amendments came into effect on 23 February 2009.

28. Regulatory Changes to Implement the Additional Protocol to the US/IAEA Safeguards Agreement, 73 Fed. Reg. 78,599 (23 December 2008).

29. Exec. Order No. 13,458, 73 Fed. Reg. 7181 (8 February 2008).

30. Protection of Safeguards Information, 73 Fed. Reg. 63,546 (24 October 2008).

SGI is a special category of sensitive unclassified information required to be protected from unauthorised disclosure under Section 147 of the Atomic Energy Act of 1954 (AEA). SGI is handled and protected more like classified national security information than like other sensitive unclassified information (e.g. privacy and proprietary information). The Commission has codified the specific measures required for protection of and access to SGI in Part 73 of its regulations. These requirements apply to SGI in the hands of any person, whether or not a licensee of the Commission, who produces, receives or acquires SGI. An individual's access to SGI requires both a valid "need to know" for the information and an authorisation based on an appropriate background check. Examples of information designated as SGI include the physical security plan for a licensee's facility, the design features of a licensee's physical protection system and operational procedures for the licensee's security organisation.

Inadequate protection of SGI, including unauthorised disclosure, may result in civil penalties. Furthermore, willful violation of any regulation or order governing SGI is a felony subject to criminal penalties in the form of fines or imprisonment, or both, as prescribed in § 223 of the AEA.

The amended regulations include the following revisions to existing SGI requirements:

(1) A revised definition of "need to know" as set forth in 10 C.F.R. § 73.2.

(2) Expanded fingerprinting and criminal history records check procedures for broader categories of individuals with access to SGI.

(3) A requirement for background checks to determine trustworthiness and reliability for individuals who will have access to SGI.

(4) Expanded scope of Part 73 to include additional categories of licensees, along with vendors, applicants and certificate holders.

(5) Expanded types of security information covered by the definition of SGI; the information categories described in §§ 73.22 and 73.23 to include detailed security measures, emergency planning scenarios, uncorrected vulnerabilities as well as training and qualification information.

(6) Clarified requirements for obtaining access to SGI in the course of adjudication and the available appeal procedures.

(7) Aligning the final rule with 10 C.F.R. § 73.59 for granting relief from fingerprinting, identification and criminal history records checks and background checks for certain categories of individuals.

TEXT

Republic of Korea

Radioactive Waste Management Act

Enters into force on 1 January 2009
Law No. 9016, enacted on 28 March 2008
Ministry of Knowledge Economy (Radioactive Waste Department)
02-2110-5535*

CHAPTER 1

General Provisions

Article 1

Purpose

The purpose of this act is to safeguard against the dangers and harmful effects of radioactive waste and to contribute to public safety and environmental protection by laying down requirements for the safe and efficient management of radioactive waste.

Article 2

Definitions

The definition of terms used in this act are as follows:

1. "Radioactive waste" means radioactive waste pursuant to Article 2-18 of the Atomic Energy Act.

2. "Radioactive waste management" means the receiving of radioactive waste whose disposal is restricted pursuant to Article 84-2 of the Atomic Energy Act from the entity generating that waste (hereinafter referred to as the "radioactive waste generator") and the transportation, storage and processing of such waste, as well as all activities carried out for that purpose.

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* Unofficial translation by the OECD.

3. “Radioactive waste management facilities” means facilities for the management of radioactive waste and the ancillary facilities thereto.

4. “Processing” means the physical and chemical treatment of radioactive waste with a view to its storage, disposal and recycling. However, the processing of spent nuclear fuels under Article 2-14 of the Atomic Energy Act shall be excluded from this definition.

5. “Disposal” means the permanent isolation of radioactive waste from the human biosphere.

Article 3

Interrelation with other legislation

Subject to specific provisions made in other legislation regarding radioactive waste management, the provisions of this act shall apply.

Article 4

Responsibilities of the state and local governments

(1) The state shall take all necessary measures to ensure that radioactive wastes are managed safely and efficiently in a way that will not place a burden on future generations.

(2) The state shall primarily promote public participation in the design and application of radioactive waste policies and shall disclose information regarding radioactive waste management to the public.

(3) Local governments shall endeavour to facilitate the work relating to radioactive waste management such as site selection and the construction and operation of radioactive waste management facilities.

(4) Central and local governments shall mutually co-operate to ensure the smooth and efficient implementation of radioactive waste management projects.

Article 5

Responsibilities of radioactive waste management companies and generators etc.

(1) The entity carrying out the radioactive waste management business pursuant to Article 9 (hereinafter referred to as the “radioactive waste management business”) shall co-operate with the nuclear safety agencies and shall safely and effectively manage radioactive waste.

(2) The radioactive waste generator shall minimise the generation of radioactive waste, safely manage radioactive waste and co-operate in the tasks relating to radioactive waste management.

(3) The nuclear power generation company pursuant to Section 12-1 Clause 3 of the Electricity Business Act shall co-operate with the radioactive waste management provider in selecting sites for waste management facilities and shall provide the latter with personnel and assistance for that purpose.

CHAPTER 2

Formulation of the basic plan for the control of radioactive waste etc.

Article 6

Basic plan for radioactive waste management

(1) The Minister of Knowledge Economy shall draw up a basic plan for radioactive waste management (hereinafter referred to as the "basic plan") aimed at ensuring the safe and efficient management of radioactive waste.

(2) The Minister of Knowledge Economy shall be subject to the deliberations and decisions of the Atomic Energy Commission pursuant to Article 3 of the Atomic Energy Act when drawing up the basic plan. The same requirement shall also apply to amendments of the basic plan in relation to important matters, as prescribed by the Presidential Decree.

(3) The basic plan shall cover all of the following:

(a) Matters relating to basic radioactive waste management policies.

(b) The current situation with regard to radioactive waste generation and prospective future trends.

(c) Matters related to facility planning such as the selection of sites for radioactive waste management facilities.

(d) Matters relating to the investment plan for radioactive waste management facilities.

(e) Other requirements for radioactive waste management for which provision is made in the Ordinance of the Ministry of Knowledge Economy

Article 7

Plan to implement radioactive waste management

(1) The radioactive waste management business shall draw up and implement the plan to implement radioactive waste management (hereinafter referred to as "the implementation plan") in accordance with the basic plan.

(2) Once an implementation plan has been drawn up, it must be submitted to the Minister of Knowledge Economy for approval. The latter's approval must also be obtained if amendments are proposed to matters that have already been approved; however, proposed changes to minor provisions in the Ordinance of the Ministry of Knowledge Economy shall simply be reported to the Minister of Knowledge Economy.

(3) Requirements with regard to approval and report procedures etc., pursuant to Clause 2 shall be set out in the Ordinance of the Ministry of Knowledge Economy.

Article 8

Survey of radioactive waste etc.

(1) The Minister of Knowledge Economy may carry out a survey of radioactive waste generation and the situation with regard to waste (hereinafter referred to as the "current situation survey") if required for the purpose of drawing up the basic plan.

(2) The Minister of Knowledge Economy may ask the heads of relevant agencies, radioactive waste generating entities and the radioactive waste management provider to submit material required for the survey in accordance with Clause 1. In such instances, the party receiving such a request shall reply unless there is a specific reason not to do so.

(3) Requirements regarding the timing and methods to be used to conduct the current situation survey shall be set out in the Ordinance of the Ministry of Knowledge Economy.

CHAPTER 3

Radioactive Waste Management

Article 9

Radioactive waste management business

The scope of the radioactive waste management business shall include the following:

1. Transportation, storage, processing and disposal of radioactive waste.

2. Site selection, construction and operation of radioactive waste management facilities and post-decommissioning management.

3. Collection, survey, analysis, and management of materials.

4. Publicity campaign with regard to radioactive waste management.

5. Supporting activities for which provision is made in the Presidential Decree such as research and development, human resource development and international co-operation required for performance of all four activities listed above.

Article 10

Radioactive waste management provider

The radioactive waste management provider shall be the Korea Radioactive Waste Management Corporation pursuant to Article 18 Clause 1.

Article 11

Operating standard for radioactive waste management facilities

(1) The radioactive waste management provider shall draw up an operating standard to ensure the safe and efficient management of radioactive waste at radioactive waste management facilities.

(2) The adoption, amendment or annulment of the operating standard by the radioactive waste management provider are subject to approval by the Minister of Knowledge Economy. However, the amendment of minor provisions of the Ordinance of the Ministry of Knowledge Economy shall simply be reported to the Minister of Knowledge Economy.

(3) The operating standard shall cover the following areas:

(a) Procedures and methods relating to the management of radioactive waste at radioactive waste management facilities.

(b) Inspection, maintenance and repair work carried out at radioactive waste management facilities.

(c) Other requirements relating to the operation of radioactive waste management facilities.

Article 12

Disclosure of information

The radioactive waste management provider shall keep the public informed of the situation with regard to radioactive waste received and the management of such waste at radioactive waste management facilities in accordance with the provisions of the Ordinance of the Ministry of Knowledge Economy.

Article 13

Delivery of radioactive waste

(1) The generator of the kinds and quantities of radioactive waste whose disposal is restricted under Article 84-2 of the Atomic Energy Act shall deliver it to the radioactive waste management provider for radioactive waste management.

(2) Requirements regarding the procedures and methods of delivery in accordance with Clause 1 shall be set out in the Presidential Decree.

Article 14

Radioactive waste management fee

(1) Radioactive waste generators shall pay for the cost of managing radioactive waste calculated on the basis of the standard charges prescribed by the Presidential Decree for the kinds and quantities of radioactive waste generated. However, nuclear power generation providers shall not pay the amount corresponding to their share of fuel management expenses imposed in Article 15 Clause 1.

(2) When delivering radioactive waste to the radioactive waste management provider in accordance with Article 13 Clause 1, the radioactive waste generator shall pay the applicable management fee to the radioactive waste management provider.

(3) The radioactive waste management provider shall pay the management fee received in accordance with Clause 2 above into the radioactive waste management fund (hereinafter referred to as the "fund") in accordance with Article 28.

(4) Radioactive waste generators, other than the nuclear power generation provider specified in the Presidential Decree, shall set aside the management fee every year to allow payment on delivery of the radioactive waste.

(5) Requirements relating to the payment and management fee procedures shall be as prescribed by the Presidential Decree.

Article 15

Spent nuclear fuel management share

(1) The Minister of Knowledge Economy shall impose on and collect from the nuclear power generation provider a spent nuclear fuel management share (hereinafter referred to as the "share") calculated on the basis of the standard charges prescribed by the Presidential Decree for the kinds and quantities of spent fuel generated and the costs incurred per unit in order to ensure that spent nuclear fuel management activities are integrated smoothly into the radioactive waste management business.

(2) Should the nuclear power generation provider fail to pay its share by the due date for payment, the Minister of Knowledge Economy shall charge a late payment fee, as prescribed by the Presidential Decree, of no more than 5/100 applicable to the period between the previous date for payment and the next due date for payment.

(3) Should the nuclear power generation provider fail to pay its share by the due date for payment, the Minister of Knowledge Economy shall set another due date and order the provider to pay. Should the provider fail to pay its share and the late payment fee specified in the section above by the new date set for payment, the sums may be recovered through a procedure based on that used to recover unpaid national taxes.

(4) The share and late fee collected in accordance with the provisions of Clauses 1 to 3 shall be paid into the fund.

(5) The nuclear power generation provider shall submit details of the kinds and quantities of spent nuclear fuel generated per quarter to the Minister of Knowledge Economy no later than 15 days after the end of each quarter.

(6) The requirements relating to methods of payment and payment due dates shall be as prescribed by the Presidential Decree.

Article 16

Prepayment of the management fee or share

(1) In the event of difficulty in drawing down monies from the Fund to cover the costs incurred in the construction of radioactive waste management facilities, notwithstanding the provisions of Articles 14 and 15, the nuclear power generation provider may be asked to pay the management fee or share in advance.

(2) The requirements relating to ceilings on the management fee or the share prepaid in accordance with Clause 1, overpaid management fees or the settlement of the share account shall be as prescribed by the Presidential Decree.

Article 17

Reserve for nuclear power plant decommissioning etc.

(1) Every year, nuclear power generation providers shall constitute and duly report in their accounts, a reserve for the decommissioning of their nuclear power plants as prescribed by the Presidential Decree.

(2) Every year nuclear power generation providers shall plan the procurement of this appropriation in accordance with Section 1 and shall submit this plan to the Minister of Knowledge Economy.

CHAPTER 4

Korea Radioactive Waste Management Corporation

Article 18

Establishment of the Korea Radioactive Waste Management Corporation

(1) The Korea Radioactive Waste Management Corporation (hereinafter referred as the "Corporation") shall be established to ensure the efficient management of radioactive waste.

(2) The Corporation shall be a limited company.

(3) The Corporation shall be established once it has been registered at the address of its main office.

(4) The Corporation may establish an agency or research institute to carry out specific tasks with the approval of the Minister of Knowledge Economy.

Article 19

Corporate officers

(1) The officers of the Corporation shall consist of up to 9 directors including 1 chairman of the board of directors, 1 vice chairman and 1 auditor.

(2) The directors shall be divided into permanent and non-permanent directors; non-permanent directors may include ex officio directors as prescribed by the Presidential Decree.

Article 20

Business activities

The Corporation's business activities shall be as follows:

(1) Radioactive waste management.

(2) Activities commissioned by the government pursuant to this act or to other laws and regulations.

(3) Other activities that must be performed in order to fulfil the founding purpose of the Corporation set out in the Corporation's statutes.

(4) Activities relating to 1 to 3 above.

Article 21

Procurement of funding

The funding needed to cover the cost of the Corporation's operations and business activities shall be provided as follows:

(1) Payments from the Fund.

(2) Loan pursuant to Article 22.

(3) Assistance or subsidies from government or non-governmental bodies.

(4) Other sources of income provided for in the Ordinance of the Ministry of Knowledge Economy

Article 22

Loan from the fund

If necessary for its business activities, the Corporation may contract a loan from the fund after a review by the Board of Directors and issuing of a resolution pursuant to Article 20.

Article 23

Free loan of national property

Notwithstanding the provisions of the Korean National Property Act, the government may make a free loan of national property to the Corporation.

Article 24

Budget etc.

(1) The chairman of the Corporation's board of directors shall draw up a budget proposal for each business year, present it to the board of directors and submit the final draft decided upon by the board for approval to the Minister of Knowledge Economy.

(2) The final budget proposal voted on by the board of directors in accordance with Section 1 shall be submitted to the Minister of Knowledge Economy at least 20 days before the start of the associated tax year.

(3) Any income remaining after the settlement of accounts for the tax year shall be used to offset any losses carried forward; the allocation of any amounts still outstanding shall be decided by the board of directors after review.

Article 25

Commissioning of work

(1) The Corporation may commission part of the radioactive waste management business prescribed in the Presidential Decree from an entity that meets the following definitions:

  (a) An agency pursuant to Article 65-2 of the Atomic Energy Act.

  (b) An entity that meets the standard prescribed in the Ordinance of the Ministry of Knowledge Economy with regard to technological competence, human resources and financial standing with regard to radioactive waste management tasks.

(2) In cases where the Corporation seeks to commission part of the radioactive waste management business pursuant to Section 1, it shall secure the approval of the Minister of Knowledge Economy. However, when the entity commissioned to perform tasks meets the definition given in Clause 1 Paragraph (a) above, the tasks to be performed as an agency pursuant to Article 65-2 of the Atomic Energy Act are considered to have already been approved by the Minister of Knowledge Economy.

(3) The provisions of Article 8 Clause 2, Article 12 and Articles 34 to 36 shall apply to the entities that are commissioned to perform radioactive waste management work pursuant to Clauses 1 and 2.

Article 26

Application of Civil Code

In addition to the provisions made in this act, the rules and regulations regarding the establishment of a company set out in the Civil Code shall apply to the Corporation.

Article 27

Supervision and management of tasks

The Minister of Knowledge Economy may supervise and manage the tasks of the Corporation, and give orders or instructions regarding the business to the Corporation when it is deemed necessary.

CHAPTER 5

Radioactive Waste Management Fund

Article 28

Establishment of a radioactive waste management fund

A radioactive waste management fund shall be established in order to secure the financial resources required for radioactive waste management activities.

Article 29

Formation of the fund

The fund shall be formed from the financial resources of each of the following:

(1) Payment by radioactive waste management providers pursuant to Article 14 Section 3.

(2) The share and late payment fee pursuant to Article 15.

(3) Assistance and donations from non-governmental agencies.

(4) Earnings from fund operation.

(5) Other income prescribed by the Presidential Decree.

Article 30

Use of the fund

(1) The fund shall be used to cover the cost of the following:

  (a) Radioactive waste management business activities.

  (b) Fund formation, management and operation.

  (c) Other assistance required for radioactive waste management activities specified in the Presidential Decree.

(2) The amounts formed out of the financial resources of the fund for specific purposes shall be kept in separate accounts and reported as such in the accounts. However, should a temporary shortfall arise in the funds available in a given account, surplus funding in other accounts may be

transferred to that account and used in accordance with the provisions of the Presidential Decree.

(3) The Minister of Knowledge Economy may recover all the funding disbursed to entities that have used that funding for purposes other than that of the applicable fund.

(4) The procedure used to recover funding in accordance with Section 3 shall be based on the procedure applicable to late tax payments.

Article 31

Fund management and operation

(1) The Minister of Knowledge Economy shall manage and operate the Fund.

(2) The requirements for fund management and operation shall be as prescribed by the Presidential Decree.

Article 32

Accounting agency of the fund

The Minister of Knowledge Economy shall appoint a Fund Income Collection Officer, a Fund Financial Officer, a Fund Expenditure Officer and a Fund Book-keeping Officer as public workers charged with the performance of tasks related to fund income and expenditure.

Article 33

Processing of fund profits and losses

(1) When a profit is generated upon the settlement of account, the entire amount shall be set aside in a reserve.

(2) When there is loss upon the settlement of account, it shall be offset with the reserve in accordance with Section 1.

CHAPTER 6

Supplementary Rules

Article 34

Reporting and inspection etc.

(1) The Minister of Knowledge Economy may require radioactive waste generators and radioactive waste management providers (hereinafter referred to as "radioactive waste generators etc.") to report or submit written material where deemed necessary for the safe and efficient management of radioactive waste pursuant to the Ordinance of Ministry of Knowledge Economy, and the minister may have relevant public workers visit the business location etc., and inspect relevant documents or facilities, equipment etc.

(2) When an inspection is carried out in accordance with the provisions of Clause 1, notice of the inspection plan, including the date and time of inspection, reason for inspection and details of the inspection, shall be given to the party to be inspected at least seven days before the inspection. However, such notice will not be given in urgent cases or when it is deemed that the inspection would not achieve its intended purpose due to the destruction of evidence.

(3) Public workers carrying out visits or inspections pursuant to Clause 1 shall carry a certificate indicating their authority and present it to the relevant personnel.

Article 35

Action order to radioactive waste generators etc.

(1) The Minister of Knowledge Economy may order necessary remedial work to be carried out in accordance with the Presidential Decree within a reasonable time period in cases where it is felt that there is cause for concern that there might be a significant impediment to radioactive waste management due to the failure of radioactive waste generators to perform the duties laid down in the decree.

(2) Before issuing an order in accordance with Clause 1, the Minister of Knowledge Economy shall notify the radioactive waste generators, of the reasons for this action and give them an opportunity to submit opinions and evidence. However, in order to ensure the safe management of radioactive waste, in urgent cases generators shall be given an opportunity to submit opinions and evidence after the order has been issued.

Article 36

Execution by proxy

The Minister of Knowledge Economy may execute by proxy, as provided for by the Administrative Execution by Proxy Act, in the event that the radioactive waste generators fail to comply with orders received pursuant to Article 35.

Article 37

Delegation of Authority

As prescribed by the Presidential Decree, the Minister of Knowledge Economy may delegate part of his authority hereunder to a corporation, institution or organisation.

Article 38

Public worker status when penalty is imposed

The officers of the corporation and the officers of the agencies and organisations involved in the performance of work commissioned by the Minister of Knowledge Economy pursuant to Article 37 are held to have the status of public workers when penalties are imposed in accordance with Articles 129 to 132 of the Criminal Code.

CHAPTER 7

Penalties

Article 39

(Penalty)

(1) Any person who endangers another human person or body or public safety through the destruction or improper operation of radioactive waste management facilities shall be liable to a term of imprisonment of between one and ten years.

(2) Any person who causes the death of another person through the destruction or improper operation of radioactive waste management facilities shall be liable to a term of imprisonment of not less than seven years, life imprisonment or death.

(3) Any person attempting to commit the crimes specified in Sections 1 and 2 above shall be punished.

(4) Any person who plots, conspires with or incites others to commit any of the crimes specified in Sections 1 and 2 above shall be liable to a minimum term of imprisonment of one year.

Article 40

Penalty

(1) Any person who damages, destroys or steals from radioactive waste management facilities or who interferes with radioactive waste management by disrupting the operation of radioactive waste management facilities shall be liable to a term of imprisonment of up to ten years or to a fine of up to KRW 50 million.

(2) Any person found guilty of the following shall be liable to a term of imprisonment of up to five years or to a fine of up to KRW 30 million:

(a) Any person who interferes with radioactive waste management facilities without a proper cause and who interferes with radioactive waste management.

(b) Any employee of the radioactive waste management sector who disrupts radioactive waste management by failing to maintain or operate radioactive waste management facilities without due cause.

(3) Any person who commits the offences specified in Clause 1 and Clause 2 Paragraph 1 shall be prosecuted.

Article 41

Penalty

Any person who is not a radioactive waste management provider or an entity from which part of the radioactive waste management business has been commissioned pursuant to Article 25 and who operates a radioactive waste management business shall be liable to a term of imprisonment of up three years and/or a fine of up to KRW 20 million.

Article 42

Penalty

Any person who carries out an implementation plan without approval in violation of Article 7 Clause 2 shall be liable to a term of imprisonment of up to two years and/or a fine of up to KRW 10 million.

Article 43

Penalty

Any person who carries out an implementation plan without securing approval for an amendment in violation of the second paragraph of Article 7 Clause 2 shall be liable to a fine of up to KRW 3 million.

Article 44

Penalty against employer and employee

(1) If an agent, servant or other employee of the Corporation commits a violation of any one of Articles 40 to 43 with regard to the Corporation's work, not only the perpetrator but also the Corporation shall be liable to the applicable fine. However, the Corporation shall not be held liable if it did not prove negligence in ensuring due care and supervision of the work.

(2) If an agent, servant or other employee of an individual commits a violation of any one of Articles 40 to 43 with regard to the individual's work, not only the perpetrator but also the individual shall be liable to the applicable fine. However, the individual shall not be held liable if he did not prove negligence in ensuring due care and supervision of the work.

Article 45

Fine for negligence

(1) A fine of up to KRW 2 million shall be imposed on any person found guilty of the following acts of negligence:

(a) Any person who fails to report amendments in violation of the second paragraph of Article 7 Clause 2.

(b) Any person who fails to submit material without reasonable cause or submits false documentation in violation of Article 15 Clause 5

(c) Any person who fails to submit a report or documentation in accordance with Article 34 Clause 1 or who submits a false report or documentation.

(d) Any person who refuses, obstructs or avoids visits and inspections in pursuance of Article 34 Clause 1.

(e) Any person who fails to comply with an order in accordance with Article 35 Clause 1.

(2) The fine for negligence in accordance with Clause 1 shall be imposed and collected by the Minister of Knowledge Economy as prescribed by the Presidential Decree.

(3) Any person who does not accept the imposition of a fine for negligence in accordance with Clause 2 may appeal against its imposition to the Minister of Knowledge Economy within 30 days of receiving notification of the fine.

(4) If a person who receives a fine for negligence in accordance with Clause 2 appeals against that fine in accordance with Clause 3, the Minister of Knowledge Economy shall immediately notify the court of jurisdiction of that fact and the court of jurisdiction receiving such notice shall consider the fine for negligence in accordance with the Non-Contentious Case Litigation Procedure Act.

(5) In cases where no appeal is lodged and the fine for negligence remains unpaid during the period specified in Clause 3, the fine shall be collected through a procedure based on that used to collect unpaid national taxes.

Supplementary Regulation

<No. 9016, 3/28/2008>

Article 1

Date of entry into force

This Supplementary Regulation shall enter into force on 1 January 2009. However, Articles 2 and 3 of this Supplementary Regulation shall enter into force on the date of public announcement of the legislation.

Article 2

Preparation for the establishment of the Corporation

(1) The Minister of Knowledge Economy shall set up a Committee to establish the Corporation (hereinafter referred to as the Establishment Committee) within two months of the public announcement of this regulation in order to carry out the tasks relating to the establishment of the Corporation and the tasks relating to the selection and appointment of directors.

(2) The Establishment Committee shall consist of no more than five members appointed by the Minister of Knowledge Economy and shall be chaired by the Deputy Minister of Knowledge Economy.

(3) At the time the Corporation is established, the chairman of the board of directors shall be chosen by the directors selected by the Establishment Committee, subject to approval by the Minister of Knowledge Economy.

(4) The Establishment Committee shall prepare the Corporation's Statutes and secure its approval by the Minister of Knowledge Economy.

(5) Once the Minister's approval has been secured in accordance with Clause 4, the Establishment Committee shall immediately register the incorporation under the joint signatures of the members of the Establishment Committee and hand over control of the Corporation to the chairman of the board of directors of the Corporation.

(6) Once control of the Corporation has been handed over in accordance with Clause 5, the Establishment Committee shall be deemed to have been dissolved and the Committee members discharged.

Article 3

Establishment costs

The establishment costs of the Corporation shall be borne by the nuclear power generation provider.

Article 4

Transfer of property, rights and duties

(1) The Corporation shall acquire and take over the property, and rights and duties that the nuclear power generation provider, at a meeting of its board of directors, decides to assign or hand over the Corporation upon establishment of the latter. However, if in the case of conditional assignment or transfer the conditions are met after the date of which the Corporation was registered, the transfer shall take place on the date on which the conditions are met.

(2) The recorded value of the property to be transferred to the Corporation in accordance with Section 1 shall be the book value on the day before the date of the transfer.

(3) Acts performed by the nuclear power generation provider with regard to the radioactive waste management business prior to the establishment of the Corporation, or acts performed on behalf of a nuclear power generation provider, shall be considered to be acts by the Corporation or acts performed on behalf of the Corporation.

Article 5

Example of application of the spent nuclear fuel management share

(1) Article 15 shall apply to spent nuclear fuel that has already been generated at the time this legislation enters into force.

(2) As prescribed by the Presidential Decree, the nuclear power generation provider may pay the share owed pursuant to Clause 1 retroactively within 15 years of the present having been executed 5 years before.

Article 6

Interim measures regarding penalties and the fine for negligence

The penalties and fines for negligence imposed on acts committed prior to the entry into force of the present legislation shall be those prescribed in the current Electricity Business Act.

Article 7

Revision of other laws

[……]

Article 8

Relationship with other legislation

If another law cites regulations set out in the existing Electricity Business Act and Atomic Energy Act at the time that law is implemented, and if there are applicable regulations in those two acts, the law shall be considered to have cited the applicable provisions therein.

International Regulatory Activities

European Atomic Energy Community

European Commission proposal for a Council Directive setting up a Community framework for nuclear safety (2008)

This revised proposal,[1] adopted by the European Commission on 26 November 2008, replaces and updates the one tabled in September 2004.[2] It is based on the principles and requirements of both the Convention on Nuclear Safety[3] (CNS) and the International Atomic Energy Agency (IAEA) Safety Fundamentals.[4]

The general objective of the proposal is to achieve, maintain and continuously improve nuclear safety and its regulation in the Community as well as to enhance the role of the regulatory bodies. Its scope of application covers the design, siting, construction, maintenance, operation and decommissioning of nuclear installations, taking into account the national legislative and regulatory frameworks of the member state concerned. The proposal fully respects each member state's decision to use or refuse nuclear energy as a component of its energy mix.

The Community's legislative framework on nuclear safety envisages several operational objectives, namely enhancing the role of national regulators, recognising the prime responsibility of the licence holder for safety under the control of the regulatory body, reinforcing the independence of the regulatory body, ensuring a high level of transparency on issues related to the safety of nuclear installations, implementation of management systems, regular safety supervision, availability of nuclear safety expertise and priority of safety.

The High Level Group on Nuclear Safety and Waste Management,[5] ENSREG (see *Nuclear Law Bulletin* Nos. 80, 81 and 82), which brings together the heads of the national regulatory or nuclear safety authorities of the 27 EU member states will become the focal point of co-operation between those authorities and will contribute to the continuous improvement of nuclear safety requirements especially with respect to new reactors.

The proposal foresees that the European Commission shall present a report to the Council on the progress made with the implementation of the directive to be accompanied, if appropriate, by legislative proposals.

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1. COM (2008) 790 final.
2. COM 2004 (526) final.
3. INFCIRC 449 of 5 July 1994.
4. IAEA Safety Fundamentals: Fundamental safety principles, IAEA Safety Standard Series No. SF-1 (2006).
5. Commission Decision 2007/530/Euratom on establishing the European High Level Group on Nuclear Safety and Waste Management (OJ L 195, 27 July 2007, p. 44 to 46).

Update of the Nuclear Illustrative Programme in the context of the Second Strategic Energy Review (2008)

As part of its overall Strategic Energy Review[6] which aims to stimulate investment in a more efficient, low-carbon energy infrastructure, the European Commission updated its Nuclear Illustrative Programme, PINC (see *Nuclear Law Bulletin* Nos. 79 and 80) in November 2008 in a Communication from the Commission to the European Parliament, the Council and the Economic and Social Committee.[7] It proposes that new nuclear construction uses the latest technology in order to ensure the highest standards of nuclear safety as well as to simplify and harmonise the currently differing licensing requirements and procedures in the member states. The Communication notes that, if strategic investment decisions on power generation capacities in nuclear as well as in renewable energy are taken rapidly, almost two thirds of the EU's electricity generation could be low carbon in the early 2020s.

The updated PINC addresses some of the key issues that were raised in debates in the European Parliament, the European Economic and Social Committee and the European Nuclear Energy Forum (ENEF).[8] These include:

- The link between nuclear energy and security of supply, with a special focus on the investment needs (replacement, life extension of ageing power plants) and security of supply for nuclear fuels.

- The role of public authorities with emphasis in the EU on nuclear safety and waste management (outside the EU on security, non-proliferation).

- The importance of public acceptance of nuclear energy and factors that influence it.

European Commission Recommendation on criteria for the export of radioactive waste and spent fuel to third countries (2008)[9]

According to this recommendation (2008/956/Euratom), the competent authorities of exporting member states are to determine, in accordance with the criteria referred to in Article 16(1)(c) of the Directive 2006/117/Euratom[10] (see *Nuclear Law Bulletin* No. 79), a third country's administrative and technical capacity for the safe management of radioactive waste and spent fuel as well as the adequacy of its regulatory structures.

For this purpose, the European Commission Recommendation, adopted on 4 December 2008, defines the main requirements relating to the export of radioactive waste or spent fuel to third countries. The requirements deal with such matters as appropriate national provisions for the radiological protection of workers and the general public, a coherent legislative framework for the regulation of activities involving a hazard from radioactive substances, effective independent regulatory authorities, a clear allocation of responsibilities between the concerned bodies, a system of

6. COM (2008) 776 final.

7. COM (2007) 565 final.

8. ENEF has been set up as a follow-up of the European Council Summit of 8 to 9 March 2007.

9. Notified under document number COM (2008) 7570; OJ L 338, 17 December 2008, p. 69 to 71.

10. Council Directive 2006/117/Euratom on the supervision and control of shipments of radioactive waste and spent fuel (OJ L 337, 5 December 2006, p. 21 to 32).

reporting or licensing, assurance that the prime responsibility for the safety of spent fuel or radioactive waste management rests with the holder of the relevant licence, the availability of qualified staff, the establishment and enforcement of an adequate national third party liability regime, the establishment and implementation of appropriate quality assurance programmes, and adequate protective and corrective measures.

In order to evaluate whether the above requirements for exports of radioactive waste and spent fuel to third countries are met, the recommendation further lists several criteria that member states should take into consideration *vis-à-vis* third countries, such as IAEA membership, ratification and compliance with the Joint Convention on the Safety of Radioactive Waste Management and the Safety of Spent Fuel Management, submission of spent fuel facilities to an IAEA safeguards agreement in connection with the signature and ratification of the Treaty on the Non-Proliferation of Nuclear Weapons etc.

It should also be noted that, according to Directive 2006/117/Euratom, member states shall, on a yearly basis, inform the European Commission and the Advisory Committee set up by the said directive, on the implementation of the export criteria.

Communication on nuclear non-proliferation (2009)

The European Commission Communication to the Council and the European Parliament,[11] adopted on 26 March 2009, identifies possible actions to strengthen the EU's contribution to international efforts in the area of nuclear non-proliferation, including the development of an international system of guaranteed supply of nuclear fuel under the umbrella of the IAEA. The document also presents the main instruments that the Community already has at its disposal to reduce the risk of proliferation of nuclear weapons.[12]

The Communication's objective is to enhance the development and promotion of a non-proliferation culture of safety and security. In particular:

- It highlights what is already being done at the EU level to reduce the risk of nuclear proliferation, particularly through the Euratom safeguards system, the Instrument for Stability and the Instrument for Nuclear Safety.

- It aims at strengthening support for the non-proliferation regime which is important in view of the revision of the Treaty on the Non-Proliferation of Nuclear Weapons in 2010.

- It aims to contribute to the development of an international system of guaranteed supply of nuclear fuel – under the multilateral umbrella of the IAEA – for countries willing to develop nuclear energy.

In the last few years, the Commission has significantly reinforced its co-operation with the IAEA and this will be essential in implementing the above actions. Successful non-proliferation initiatives also require co-ordinated actions with key partners, as for example the United States, the Russian Federation, Japan and China.

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11. COM (2009) 143 final.

12. For more on the EU's non-proliferation instruments, see Kobia, Roland, "The EU and Non-Proliferation, Need for a Quantum Leap?", *Nuclear Law Bulletin* No. 81.

International Atomic Energy Agency

Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management – Third Review Meeting (2009)

The Third Review Meeting of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (Joint Convention) was held at the IAEA Headquarters in Vienna from 11 to 20 May 2009.

The Joint Convention was adopted on 5 September 1997 and entered into force on 18 June 2001. Its objectives are:

(i) To achieve and maintain a high level of safety worldwide in spent fuel and radioactive waste management through the enhancement of national measures and international co-operation, including, where appropriate, safety-related cooperation.

(ii) To ensure that during all stages of spent fuel and radioactive waste management there are effective defences against potential hazards so that individuals, society and the environment are protected from the harmful effects of ionizing radiation now and in the future, in such a way that the needs and aspirations of the present generation are met without compromising the ability of future generations to meet their needs and aspirations.

(iii) To prevent accidents with radiological consequences and to mitigate their consequences should they occur during any stage of spent fuel or radioactive waste management.

In order to achieve these objectives, the Joint Convention adopted a review process which requires each contracting party to submit, in advance, to all other contracting parties a national report describing how it implements the obligations of the Joint Convention; to seek clarification on the national reports of other contracting parties through a system of written questions and answers; and to present and discuss its national report during a review meeting comprising country group sessions and plenary sessions (Articles 30 and 32 of the Joint Convention).

Forty-five out of 48 contracting parties participated in the Review Meeting. The President of the meeting was Mr. Kunihisa Soda, Commissioner of the Nuclear Safety Commission of Japan and Vice-President was Mr. László Koblinger of the Hungarian Atomic Energy Authority.

The six country groups met in parallel from 11 to 15 May 2009. Contracting parties with nuclear power plants were assigned 2/3 days and those without a nuclear power plant were assigned 1/3 day for the review of their national reports. The rapporteurs of each country group presented their summaries to the plenary on 18 May 2009.

The meeting was held at a time when several countries are considering launching a national nuclear power programme. It was therefore strongly recommended that the safety of spent fuel and radioactive waste management be taken into account from the very beginning (see Summary Report of the meeting, available at www-ns.iaea.org/downloads/rw/conventions/third-review-meeting/final-report-english.pdf).

Amongst the good practices, the participating countries particularly noted the importance of:

- National strategies and policies for radioactive waste management and for spent fuel management where applicable.

- Legal and regulatory frameworks for radioactive waste management and spent fuel management where applicable.

- International co-operation and public participation.

At the same time, they recognise that much still needs to be done to meet the following challenges:

- Implementation of national policies for the long-term management of spent fuel, including disposal of high level waste and/or spent fuel.

- Siting, construction and operation of spent fuel and radioactive waste disposal facilities.

- Management of legacy wastes.

- Monitoring of disused sealed sources and recovery of orphan sources.

- Knowledge management and human resources.

- Financial resources for liabilities.

On 15 May 2009, Portugal deposited its instrument of ratification and will become the 49th contracting party on 13 August 2009 (Article 40 paragraph 2 of the Joint Convention).

The OECD Nuclear Energy Agency and the European Bank for Reconstruction and Development (EBRD) participated as observers.

Bilateral Agreements[1]

Co-operation in the peaceful uses of nuclear energy

- Bangladesh and Russia: Memorandum of understanding on co-operation in nuclear energy.
- France and Italy: Agreement on co-operation in the field of nuclear energy.
- France and Tunisia: Agreement on the development of nuclear energy for peaceful purposes.
- India and Kazakhstan: Memorandum of understanding on co-operation in civil nuclear energy.
- India and the Russian Federation: Agreement on civil nuclear co-operation.
- Italy and Japan: Memorandum to co-operate in nuclear power development.
- Japan and Jordan: Memorandum of co-operation on the introduction of nuclear power in Jordan.
- Japan and the Russian Federation: Agreement on co-operation in the field of the peaceful use of nuclear energy.
- Japan and the United Arab Emirates: Agreement on civil nuclear co-operation.
- Nigeria and the Russian Federation: Memorandum of understanding on co-operation in the peaceful use of nuclear energy.
- Oman and the Russian Federation: Memorandum of understanding in the field of peaceful use of nuclear energy.
- United Arab Emirates and the United States: Agreement for co-operation in the peaceful uses of nuclear energy.

Co-operation in the field of uranium mining and production and nuclear fuel supply

- China and Kazakhstan: Agreement to increase co-operation in uranium mining and long-term nuclear cooperation projects.
- The Russian Federation and Ukraine: Agreement securing Ukraine's nuclear fuel supply for 2009-2010.

Co-operation with respect to a nuclear facility or nuclear equipment

- Brazil and France: Agreement on co-operation in the development of nuclear propulsion systems for military submarines.
- Canada and Jordan: Agreement by virtue of which Canada will help Jordan construct a nuclear power plant to generate electricity and desalinate seawater.
- Jordan and the Russian Federation: Agreement on assistance to Jordan in building power and desalination plants.

Co-operation for training

- Mongolia and the Russian Federation: Memorandum of understanding on training of nuclear specialists.

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1. Selective list of bilateral agreements which have been concluded during the course of the first half of 2009, brought to our attention largely on the basis of the news media: World Nuclear News and NucNet News in Brief.

European Atomic Energy Community

Third plenary meeting of the European Nuclear Energy Forum (2008)

The third plenary meeting of the European Nuclear Energy Forum (ENEF) took place in Bratislava on 3 and 4 November 2008, gathering more than 200 high-level participants from amongst all relevant stakeholders (see *Nuclear Law Bulletin* Nos. 81 and 82). The discussions allowed progress on important subjects such as transparency in nuclear projects, harmonised safety standards, requirements of a modern electricity grid and pricing models for nuclear energy. At the same time, they reflected different opinions on the peaceful use of nuclear energy.

ENEF called for improved "transparency of nuclear energy", promoting a shift from a "culture of silence" to a "culture of active information". This should become a priority for all key actors in the nuclear community in order to build trust and understanding. To this effect ENEF supports the efforts already initiated by the European Commission to facilitate the distribution of objective and reliable information. In addition, it is necessary to develop an appropriate consultative process in the nuclear field, building in particular on municipalities with nuclear facilities and local information commissions.

With regard to the risks of nuclear energy, ENEF supports a legal framework for nuclear safety responding to the public demand as underlined by public opinion surveys. This will allow moving from a voluntary and indicative context to legally binding rules which provide additional rights to EU citizens. Further efforts in the field of education and training also need to be developed linking universities, companies and civil society while taking into account the need for nuclear safety as well as the requirements of nuclear medicine.

On the subject of "opportunities of nuclear energy" ENEF examined various options for translating cost aspects of nuclear energy into energy prices for the final consumer. As 50% of the electricity generation capacity in the European Union will have to be replaced in the coming decades, ENEF stated that it is time to reconsider the grid concept. A new European smart grid would be more secure, efficient and integrated. The grid would need to link large power plants guaranteeing base-load electricity, which is essential for the EU economy, and a series of small decentralised power sources resulting from the rapid development of renewable energy. The need for increased energy efficiency is also important for the definition and maintenance of the grid.

The fourth plenary session of the Forum will take place in Prague on 28 and 29 May 2009.

Meetings of the European High Level Group on Nuclear Safety and Waste Management (2009)

The 7th and 8th meetings of the European High Level Group on Nuclear Safety and Waste Management (ENSREG) took place on 15 January 2009 and 15 April 2009 respectively. Following a debriefing of the ongoing discussions at the Council level on the Commission's proposal for a Directive on Nuclear Safety, the discussions of the group were mainly focussed on the following items:

- Review of progress on the work programme.

- Preparation of the ENSREG Activity Report which, according to the Council Decision,[1] should be presented to the European Parliament and the Council.

- Enhancing the transparency of the group's work. In this context it has been agreed, for instance, that each ENSREG meeting will be followed shortly by a statement from the Chairman to the public. ENSREG Members also agreed on a faster procedure for publishing its minutes.

The next meeting of the group will take place on 2 July 2009 to finalise the work of the groups and of the activity report addressed to the European Parliament and the Council.

Launching public consultation on a proposal for new requirements on natural radiation sources in the Basic Safety Standards Directive (Consultation period: 2 February 2009 – 20 April 2009)

The Basic Safety Standards Directive[2] is presently being revised as part of a recasting procedure which aims at merging five Euratom Directives into one. The first block of legislative provisions is related to the management of natural radiation sources.

The European Commission welcomes comments from stakeholders on the rationale of the proposed approach for natural radiation sources, on its adequacy and on the impact of the requirements on regulatory bodies and industries. The results of the consultation shall be further reflected in the decision-making process for the adoption of the recast directive.

The reference documents for this public consultation are published at http://ec.europa.eu/energy/nuclear/consultations/2009_04_20_natural_radiation_sources_en.htm.

International Nuclear Law Association

Nuclear Inter Jura Biennial Congress in Toronto (2009)

The 2009 Nuclear Inter Jura Congress will be held in Toronto, Canada from 5 to 9 October 2009. The biennial congress is organised by the International Nuclear Law Association (INLA) in co-operation with the Canadian Nuclear Law Organisation.

This Congress will be the 19th in a series of biennial meetings of INLA, created in 1972 to promote the study of legal issues associated with the peaceful uses of nuclear energy and to encourage the exchange of information in this field.

It will address the pressing legal challenges facing governments, scientists and the nuclear energy industry at a time of global economic and environmental crisis and increasing energy demand, particularly in the developing world. These challenges include the safe and timely construction and operation of new nuclear reactors, their financing, meaningful public consultation, financial security for nuclear liabilities, safe storage of nuclear waste and non-proliferation.

1. Commission Decision 2007/530/Euratom.
2. Council Directive 96/29/Euratom of 13 May 1996 laying down basic safety standards for the health protection of the general public and workers against the dangers of ionizing radiation (Official Journal L-159, *29 June 1996, p. 1 to 114*).

Every two years legal experts, regulators, politicians and public policy specialists from around the world address a wide variety of legal issues in the context of the latest legal, political and economic climate at the Nuclear Inter Jura Congress.

The current President of INLA is Mr. Stanley David Berger, Assistant General Counsel at Ontario Power Generation Inc. More information on the forthcoming congress, including further details on the programme, is available at www.aidn-inla.be and www.cnlo.ca.

International Renewable Energy Agency

Foundation of a new international agency (2009)

The International Renewable Energy Agency (IRENA) was officially established on 26 January 2009 at the founding conference in Bonn, Germany. The conference was chaired by Germany's Federal Minister for Environment, Nature Conservation and Nuclear Safety, Sigmar Gabriel. Germany, together with Denmark and Spain, had actively supported and prepared the creation of this agency.

At present, 83 governments of developed and developing countries have signed the statute and become founding members of IRENA. All countries are members of IRENA's Preparatory Commission, the interim body established during the foundation period and which will be dissolved upon entry into force of the statute, to occur 30 days following the date of deposit of the 25th instrument of ratification. The agency will then consist of an Assembly, a Council and a Secretariat.

IRENA aims at becoming the main driving force in promoting a rapid transition towards the widespread and sustainable use of renewable energy on a global scale. It is to provide practical advice and support to both industrialised and developing countries, to help them improve their regulatory frameworks and build technological capacity. The agency will facilitate access to all relevant information including reliable data on the potential of renewable energy, best practices, effective financial mechanisms and state-of-the-art technological expertise.

The statute defines the agency's objectives as the promotion of widespread adoption and sustainable use of all forms of renewable energy, taking into account national and domestic priorities, benefits derived from a combined approach of renewable energy and energy efficiency measures, and the contribution of renewable energy to environmental preservation through limiting pressure on natural resources, in particular reducing deforestation, desertification and biodiversity loss; climate protection; economic growth and social cohesion, including poverty alleviation and sustainable development; access to and security of energy supply; and regional development and inter-generational responsibility.

According to Article III of the statute, "renewable energy" means all forms of energy produced from renewable sources in a sustainable manner which include, *inter alia*, bioenergy, geothermal energy, hydropower, ocean energy (including inter alia tidal, wave and ocean thermal energy), solar energy and wind energy.

More information is available at www.irena.org.

List of Correspondents to the Nuclear Law Bulletin

ALBANIA	Mr. F. YLLI, Director, Institute of Nuclear Physics
ALGERIA	Mr. F. CHENNOUFI, Lawyer, Atomic Energy Commission
ARGENTINA	Mr. J. MARTINEZ FAVINI, Consultant, National Atomic Energy Commission
	Mr. M. PAEZ, Head of Department, National Atomic Energy Commission
ARMENIA	Mr. A. MARTIROSYAN, Armenian Nuclear Regulatory Authority
AUSTRALIA	Ms. O. LIAVAS, Corporate Counsel for Australian Radiation Protection and Nuclear Safety Agency
	Mr. S. MCINTOSH, Australian Nuclear Science and Technology Organisation
AUSTRIA	Mr. T. AUGUSTIN, Deputy Director for Nuclear Co-ordination, Federal Ministry of Agriculture, Forestry, Environment and Water Management
BELARUS	Mr. D. LOBACH, Ministry on Emergency Situations, Gasatomnadzor
BELGIUM	Mr. F. MOLITOR, Engineer-Director, Technical Safety of Nuclear Installations, Ministry of Employment and Labour
BRAZIL	Mr. E. DAMASCENO, National Commission for Nuclear Energy
	Ms. D. FISCHER, Brazilian Association of Nuclear Law
BULGARIA	Mrs. A. BELYANOVA, Head, Legal Department, Nuclear Regulatory Agency
CANADA	Ms. L. THIELE, Senior Counsel and Deputy Director of the Legal Services, Canadian Nuclear Safety Commission
	Mr. J. LAVOIE, General Councel and Manager, Legal Services Unit, Canadian Nuclear Safety Commission
CHINA	Ms. Z. LI, Director of the Law Office, China National Nuclear Corporation
	Ms. Q. WANG, Commission of Science, Technology and Industry for National Defense
CROATIA	Mr. I. VALCIC, Head, Department for Nuclear Safety, Ministry of Economic Affairs
DENMARK	Ms. R. PETERSEN, Head of Section, Ministry of Justice, Law Department, Property Law Division
EGYPT	Mr. A.-M. MAREI, Assistant Lecturer, Nuclear Law Department, National Centre for Nuclear Safety, Atomic Energy Authority

ESTONIA	Ms. K. MURU, Department of Radiation Protection, Estonian Radiation Protection Centre
FINLAND	Mr. Y. SAHRAKORPI, Ministerial Counsellor, Energy Department, Ministry of Trade and Industry
FRANCE	Ms. F. TOUITOU-DURAND, Legal Directorate, Atomic Energy Commission
GERMANY	Professor N. PELZER, Consultant
GREECE	Professor L. CAMARINOPOULOS, President, Greek Atomic Energy Commission
HUNGARY	Dr. L. CZOTTNER, Senior Legal Adviser, Hungary Atomic Energy Authority
	Professor V. LAMM, Institute for Legal Studies, Academy of Sciences
ICELAND	Mr. S. MAGNUSSON, Director, Icelandic Radiation Protection Institute
INDIA	Mr. S.D. DAVE, Judge, Circuit Court
INDONESIA	Mr. M. POERNOMO, Senior Officer, Nuclear Energy Control Board
	Ms. V. DEWI FAUZI, Legal Officer, National Nuclear Energy Agency
IRELAND	Ms. I. BOLGER, Information Officer, Radiological Protection Institute
ISRAEL	Mr. R. LAHAV, Legal Adviser, Atomic Energy Commission
ITALY	Mr. V. FERRAZZANO, Head of Legal Department, SOGIN SPA
	Mr. M. FRANZA, Unit of Institutional Relations, ENEA
JAPAN	Mr. Y. KAWAGUCHI, First Secretary, Japanese Delegation to the OECD
	Mr. T. YAMAMURA, Policy Research Office, Nuclear Non-Proliferation Science and Technology Centre, Japan Atomic Energy Agency
KAZAKHSTAN	Ms. L. NOVOZHILOVA, Legal Advisor, Kazakhstan Atomic Energy Committee
REPUBLIC OF KOREA	Professor K.-G. PARK, Faculty of Law, Korea University
LATVIA	Mr. A. SALMINS, Director, Radiation Safety Centre
LITHUANIA	Mr. M. ABRAITIS, Chief Legal Adviser, VATESI
LUXEMBOURG	Mr. P. MAJERUS, Radiation Protection Division, Health Directorate, Ministry of Health
MACEDONIA	Mr. D. NEDELKOVSKI, Radiation Protection Department, Republic Institute for Public Health
MEXICO	Mr. S. BERTRÁN DEL RÍO, Director General for Internacional Affaire, Ministry of Energy

	Mr. J. GONZALEZ ANDUIZA, Legal Affairs Department, Federal Commission on Electricity
	Mr. M. PINTO CUNILLE, Head of the Legal and International Affairs Department, National Commission on Nuclear Safety and Safeguards
MOLDOVA	Ms. M. CORFANENCO, Head of the Legal and Foreign Affairs Division, Department of Standardisation and Metrology
MONTENEGRO	Prof. JOVANOVIC, Faculty of Natural Sciences, University of Montenegro
MOROCCO	Ms. L. ZIDI, Management Assistant, National Centre of Nuclear Energy, Science and Techniques
NETHERLANDS	Dr. N. HORBACH, Director, Centre for Transboundary Damage and Compensation
	Mr. R. VAN EMDEN, Legal Adviser, Ministry of Finance
NORWAY	Mr. S. HORNKJØL, Acting Head of Section, Norwegian Radiation Protection Authority
POLAND	Mr. M. KOC, Specialist for International Legal Affairs, National Atomic Energy Agency
PORTUGAL	Ms. M. MONTEIRO, Legal Adviser, Nuclear and Technological Institute
ROMANIA	Mr. V. CHIRIPUS, Attorney at Law, SN Nuclearelectrica S.A.
	Mr. V. ZSOMBORI, Chairman, National Commission for the Control of Nuclear Activities
RUSSIA	Mr. A. UTENKOV, Federal Environmental, Industrial and Nuclear Supervision Service of Russia (Rostechnadzor)
REPUBLIC OF SERBIA	Mrs. M. COJBASIC, Senior Adviser, Ministry of Science
SLOVAK REPUBLIC	Mr. M. POSPÍŠIL, Legal Director, Nuclear Regulatory Authority
SLOVENIA	Mr. A. ŠKRABAN, Head, Office of General Affairs, Slovenian Nuclear Safety Administration
SOUTH AFRICA	Mr. N.G. NHLAPHO, Legal Adviser, National Nuclear Regulator
SPAIN	Mr. J.R. MARTIN HERNANDEZ, Legal Adviser, Nuclear Safety Council
	Ms. E. MENENDEZ-MORAN, Sub-Directorate of Nuclear Energy, Ministry of Economy
SWEDEN	Mr. T. LOFGREN, Legal Adviser, Swedish Radiation Safety Authority
	Mr. T. ISRAELSSON, Legal Adviser, Swedish Radiation Safety Authority
SWITZERLAND	Mr. R. TAMI, Head, Legal Service, Federal Office of Energy
TUNISIA	Mr. M. CHALBI, Ministry of Education and Science, National School of Engineering

TURKEY	Mr. F. KURHAN, Legal Adviser, Turkish Atomic Energy Authority
UKRAINE	Ms. S. PILGUN, Main Specialist, Department of Planning, Co-ordination and Development, State Nuclear Committee of Ukraine
	Mr. V. SHVYTAI, Head of Presidential Office, National Nuclear Energy Generating Company ENERGOATOM
UNITED KINGDOM	Ms. L. MUSTAFA, Legal Adviser, Department of Trade and Industry
UNITED STATES	Ms. S. ANGELINI, Attorney Adviser, Office of Civilian Nuclear Programs, Department of Energy
	Mr. S. BURNS, Deputy General Counsel, U.S. Nuclear Regulatory Commission
URUGUAY	Professor D. PUIG, Professor of Nuclear Law, College of Law, University of Uruguay
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WHO	Ms. G. PINET, Director, Health Legislation

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