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ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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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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FOREWORD

This issue of the *Nuclear Law Bulletin* coincides with the 50th anniversary of the OECD Nuclear Energy Agency under whose auspices we have been proudly publishing the Bulletin for 40 years now.

According to Article 1 of its Statute, the purpose of the Agency is to "…further the development of the production and uses of nuclear energy, including applications of ionising radiations, for peaceful purposes by the participating countries, through co-operation between those countries and a harmonisation of measures taken at the national level".

Initially, the NEA's activities focused on laying the foundation for nuclear co-operation, including the establishment of joint R&D undertakings such as the Halden and Dragon reactor projects, and the Eurochemic prototype plant for reprocessing spent nuclear fuel. Later on, the Agency's role evolved into a forum for co-operation among member countries' national nuclear programmes, particularly in the health, safety and regulatory areas. In the early 1990s, the NEA also engaged in a limited outreach programme with countries of Central and Eastern Europe. Its current mission is to assist its member countries in maintaining and further developing, through international co-operation, the scientific, technological and legal bases required for the safe, environmentally friendly and economical use of nuclear energy for peaceful purposes.

Throughout its history, the NEA has benefitted significantly from the homogeneity of its membership, its flexible working methods, the depth and quality of its technical work, and its small size and cost-effectiveness. These features will continue to be the key to the role that the Agency plays in the future, as the role of nuclear power itself evolves.

The NLB Editorial Team
December 2008

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U.S.–India Nuclear Cooperation and Non-Proliferation

*by Yash Thomas Mannully**

The "Agreement for Cooperation Between the Government of the United States of America and the Government of India Concerning Peaceful Uses of Nuclear Energy"[1] (hereinafter referred to as "U.S.-India Nuclear Cooperation Agreement" or "123 agreement") acknowledges a shift in international strategies and relations in both countries. As to India, it marks the end of nuclear isolation resulting from constraints, embargoes and controls and instead opens the path for nuclear commerce. With respect to the United States it entails a major geo-strategic ally in the evolving South-Asia region and promises large commercial benefits to the U.S. nuclear sector. This so called "nuclear deal" constitutes one of the major political, economic and strategic relationships developing between the two countries since 2001. It will lead to the separation of military and civilian nuclear installations in India, the latter to be placed under the safeguards system of the International Atomic Energy Agency (IAEA). It thus *de facto* accepts India in the club of nuclear weapon states within the meaning of the Treaty on the Non-proliferation of Nuclear Weapons (NPT)[2] although it is not party to this treaty, refuses adhering to it, officially possesses nuclear weapons and is not subject to a comprehensive system of safeguards.

A number of instruments which deal with the non-proliferation aspect of the nuclear co-operation between the United States and India, both domestically and internationally, have been concluded as a result of the Joint Statement between President George W. Bush and Prime Minister Manmohan Singh of 18 July 2005,[3] followed by the U.S.–India Joint Statement of 2 March 2006.[4] National legislation and international agreements were adjusted to allow nuclear co-operation with India for civilian purposes based on non-proliferation commitments. The inclusion of India into the non-proliferation regime outside the NPT highlights the flexibility given to international principles, especially taking into account the continued commitment to prevent the proliferation of weapons of mass destruction and related technologies.

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* Indian Advocate. The author alone is responsible for the facts and opinions expressed in this article.

1. Text of the agreement is reproduced on page 41 of this Bulletin.

2. Michel, Q., "Critical Reflections on the Treaty on the Non-Proliferation of Nuclear Weapons", *Nuclear Law Bulletin* No. 80, p. 26.

3. Text of the 2005 Joint Statement is reproduced on page 29 of this Bulletin.

4. www.whitehouse.gov/news/releases/2006/03/20060302-5.html.

The end of the Cold War together with the economic growth of Asia, especially in China and India, has led to a realignment of Western policies and strategies towards these countries.

The U.S.–India Nuclear Cooperation Agreement and the recent waiver by the Nuclear Suppliers Group (NSG)[5] primarily aim at developing nuclear commerce with India but have wider implications in the areas of strategic policies and international affairs. The 123 agreement, whilst being a clear deviation from established non-proliferation principles and policies, will be especially relevant with a view to changing international geopolitical equations and strategies.

This article will examine the developments which led to the 123 agreement and its subsequent implementation in a wider context of international relations and non-proliferation. First, the article gives a brief introduction into the Indian nuclear programme, the legislative framework and the factors which necessitated nuclear cooperation between India and the United States. Secondly, it will address the implementation of the nuclear deal and subsequent developments. Finally, it will analyse the non-proliferation issues related to the implementation of the agreement.

I. Indian nuclear programme and legislative framework

Indian nuclear programme

The Indian nuclear programme has its origins in the early 1940s and has since grown to considerable dimensions in range and content, with facilities and activities spread all over the country, affecting the country's social, economic and political life. India has effectively used nuclear energy for societal developments, especially in the field of agriculture and medicine. It is a country which insisted on indigenous technology and resources, stressing the importance of self-reliance. This resulted in the development of the industrial backbone necessary for a nuclear power programme.

The Indian nuclear power programme encompasses three stages in order to exploit the full potential of its vast thorium deposits and with the objective of acquiring indigenous capabilities for mastering the entire nuclear cycle. The first stage envisaged power generation from pressurised heavy water reactors (PHWRs) together with research and development covering the front and back end of the nuclear fuel cycle. The available uranium deposits in India can only be used for generating 10 000 to 12 000 MWe from PHWRs. The success of the first stage resulted in the initiation of the second stage which was based on the development of fast breeder reactors using the plutonium derived from the spent fuel of the PHWRs. The experience gained in the 20 years of operation of the fast breeder test reactor led to the development of the prototype fast breeder reactor at Kalpakkam.[6] The third stage of reactors will be based on thorium-uranium233 cycle.

In India, there are currently 17 nuclear reactors that contribute to less than 3.0% (4 120 MWe) of the total installed electrical capacity, and six nuclear power plants are under construction. The country has received foreign assistance from the United States, Canada and Russia in order to develop its nuclear power programme. The U.S.–India Agreement for Peaceful Nuclear Cooperation of 1963[7]

5. NSG Statement on Civil Nuclear Cooperation with India, INFCIRC 734 (Corrected); text reproduced on page 83 of this Bulletin.

6. Implementation of the India-United States Joint Statement of 18 July 2005: India's Separation Plan, tabled by the Government of India before the Indian Parliament on 7 March 2006.

7. Agreement for Cooperation between the Government of the United States of America and the Government of India Concerning the Civil Uses of Atomic Energy, signed in Washington on 8 August

resulted in the commissioning of the two Tarapur nuclear power plants at Maharastra in the 1960s by General Electric. Later in the 1970s, Canadian assistance was obtained for the construction of the 300 MWe twin PHWRs at Rawatbhatta, Rajasthan. Moreover, the two Light Water Reactors (LWR) being built at Kodankulam, Tamil Nadu benefit from Russian support.[8]

The unique nature of a nuclear programme has led to linkages between the military and civilian programmes across the expanse of the nuclear fuel cycle[9] and the national industrial infrastructure. India's stance against the NPT has limited its possibilities to engage in international co-operation in the field of nuclear energy and has also caused the non-separation of its military and civilian facilities since available resources were limited. India consistently refused to sign the NPT, arguing that it is discriminatory and that it fails to completely ban nuclear weapons. India's strategic and geographic position, together with its experiences with neighbouring countries, has influenced its argument regarding complete disarmament. The nuclear test conducted by India in 1974 at Pokhran, the halted nuclear test in 1995 due to U.S. pressure and two nuclear tests in May 1998 have further isolated the Indian nuclear industry from obtaining international assistance and co-operation.

Legislative framework

The peaceful uses of nuclear energy are governed by the Atomic Energy Act.[10] The first Atomic Energy Act was passed in 1948 but repealed in 1962 in favour of more detailed and comprehensive enactments "to provide for the development, control and use of atomic energy for the welfare of the people of India and for other peaceful purposes".[11] The current act empowers the Central Government to carry out all tasks associated with the use of nuclear energy. Thus, the Indian nuclear programme is completely dominated by government entities as it is the Central Government which enjoys exclusive control on all matters relating to nuclear energy.[12] The 1987 Amendment to the Atomic Energy Act[13] was mainly introduced to remove the financial hurdles faced by the Department of Atomic Energy in building nuclear power plants, as the provisions under the earlier 1948 Act did not allow commercial borrowing. It set the stage for the formation of the nuclear power corporation which resulted in more transparency, since it adopted certain accounting principles which had not been present in nuclear power establishments until then.[14]

Updating its legal regime will be a priority for India, particularly with respect to nuclear third party liability laws which will be critical to the implementation of the agreement, especially for suppliers. The "Henry J. Hyde United States-India Peaceful Atomic Energy Cooperation Act of

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1963 and entered into force 25 October 1963, reproduced in Brahma Chellaney, *Nuclear Proliferation: The US-India Conflict* (New Delhi: Orient Longman, 1993), pp. 318-327.

8. The PHWRs use natural uranium (containing 0.7% fissile ^{235}U) while the imported LWRs/BWRs use uranium enriched to 3-4% ^{235}U.

9. Indian Prime Minister Manmohan Singh's Suo-motu Statement in Parliament on Civil Nuclear Co-operation with the United States, 27 February 2006.

10. Atomic Energy Act 1962, No. 33 (15 September 1962) as amended by Acts No. 59 of 23 December 1986 and No. 29 of 8 September 1987, text available at www.dae.gov.in/rules/aeact.pdf.

11. *Ibid*, Preamble.

12. Union List, Constitution of India, List 1, Entry 6.

13. Atomic Energy (Amendment) Act No. 29 of 1987.

14. Sukumar Muralidharan, "Birth of Nuclear Power Corporation", 23 E.P.W. 190 (1986).

2006"[15] accordingly calls upon India to ratify or accede to the Convention on Supplementary Compensation of 12 September 1997.[16]

The Indian Atomic Energy Act does not specifically deal with the question of compensating nuclear damage. On the contrary, Section 29 of the act provides that:

> "No suit, prosecution or other legal proceeding shall lie against the Government or any person or authority in respect of anything done by it or him in good faith in pursuance of this Act or of any rule or order made under".

This provision seems to confer immunity from legal action for acts in *good faith* and the question arises whether the Central Government will reject claims by third parties who have suffered injury or damages as a result of a nuclear incident and who bear the burden of proof. While the Supreme Court has ruled in favour of strict and absolute liability,[17] the legal framework remains too vague to provide international suppliers with the assurances.

With respect to the international level, India is party/contracting state to the following international conventions in the field of nuclear energy

- Convention on the Physical Protection of Nuclear Material
- Amendment to the Convention on the Physical Protection of Nuclear Material
- International Convention for the Suppression of Acts of Nuclear Terrorism
- Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency
- Convention on Early Notification of a Nuclear Accident
- Convention on Nuclear Safety

It remains to be seen if India will follow the pleas of some states to accede to the Comprehensive Nuclear-Test-Ban Treaty, an accession which "would bring the Treaty a further, very important step closer to entry into force".[18] Article XIV of the treaty provides that it will enter into force 180 days after the date of deposit of the instruments of ratification of the 44 states listed in Annex 2 to which India belongs. As of November 2008, there are three states (India, Pakistan and

15. Henry J. Hyde United States-India Peaceful Atomic Energy Cooperation Act of 2006, Pub. L. No. 109-401 (18 December 2006), available at www.govtrack.us/congress/billtext.xpd?bill=h109-5682.

16. *Ibid*, Section 103 (b)(3)(E).

17. In *M.C. Mehta v Union of India* (A.I.R.1987 S.C.1099), the Supreme Court observed that where an enterprise is engaged in a hazardous or inherently dangerous activity and damage results to anyone on account of an accident while conducting the hazardous activity, the enterprise is strictly and absolutely liable to compensate all those who are affected by the accident. Probably the most important case on the question of nuclear damage is *M.K. Sharma v Bharat Electronics* (A.I.R 1987 S.C. 1792). In this case the Supreme Court specifically recognised the right of workers to compensation for injuries suffered as a result of a radiation incident as part of their fundamental rights to life and liberty, and directed the Union of India to provide insurance coverage.

18. Germany's Minister of Foreign Affairs, Frank Walter Steinmeier, at the 2008 CTBT Ministerial Meeting.

Democratic People's Republic of Korea) that have not signed and nine states that have not ratified the treaty, out of the 44 states listed in Annex 2.[19]

If a state is inconsistent with internationally recognised standards or procedures, even if its legislative framework is well developed and complete, it will have implications on trade, co-operation and assistance.

II. Why Nuclear Co-operation?

The nuclear co-operation between India and United States is a result of commercial and strategic interests.[20] It can also be attributed to the fact that changes in international relations caused both countries to reconsider their strategies.

1. Indian interests

For the last six decades, Indian interests and policies in nuclear energy were not highlighted at the international level, largely due to its stance with respect to the Non-Proliferation Treaty.[21] India's refusal to sign the NPT has, to a significant extent, limited its role in international affairs as India was viewed as a country in the group of states which support clandestine nuclear programmes. As a result, in its effort to embark on peaceful uses of nuclear energy, it not only became difficult to obtain nuclear technology and resources from other countries but it was equally difficult to support developing countries through nuclear commerce.

The Indian position on nuclear non-proliferation has always been confusing and challenging to the international community. The gradual strengthening of the non-proliferation regime through controls over dual-use materials and the issues related to international terrorism have limited the options for India to receive nuclear fuel and technologies from NSG participating governments.[22] The difficulties which India faced in obtaining nuclear materials and technology from Russia for the Kodankulam Nuclear Power Plant is a clear example of this point. Further, the non-availability of nuclear fuel and the limitation in developing uranium mines due to environmental issues have affected the plant load factor of nuclear power plants.

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19. See Annex 2 states at www.ctbto.org.

20. For instance after the Second World War, the United States initially advocated complete restriction of the dissemination of information related to nuclear energy, even to allied countries, as it failed to find agreement and co-operation for the use of nuclear technology and resources. The development of advanced nuclear technologies and the use of nuclear explosive devices by other allies resulted in the policy shift, initiated by the "Atoms for Peace" speech delivered by U.S. President D. Eisenhower in December 1953, promoting the various peaceful applications of nuclear energy, while at the same time restricting the capability to have nuclear weapons only to major powers. Similar approaches for strategic and commercial interests resulted in the transfer of nuclear technology for civil uses to different countries across the world.

21. India is a non nuclear weapon state (NNWS) under the 1968 Non-Proliferation Treaty (NPT) even though it has conducted nuclear tests and possesses nuclear weapons. According to Article III.2 of the NPT, state parties shall not transfer nuclear material or single use equipment and material to NNWS except subject to IAEA Safeguards.

22. In international nuclear trade, constraints are imposed by the Nuclear Supplier Group Guidelines, IAEA Safeguard Agreements INFCIRC/153, Small Quantity Protocol, 1974, Model Additional Protocol (INFCIRC/540) and United Nations Security Council Resolution 1540 (2004).

India follows a three-stage nuclear programme in order to use the country's modest uranium and vast thorium resources. The indigenously developed fast breeder technology, part of the second stage, is currently still a prototype. Moreover, the small capacity of indigenously developed Indian reactors necessitated nuclear co-operation to obtain larger reactors and to boost the energy output.[23]

India is ambitious in terms of its increasing energy demand and wishes to fuel its growing economy without depending on imported fossil fuels as part of its energy security goals. The utilisation of nuclear energy becomes a key policy matter when considering other issues, such as the commitments under the Kyoto Protocol[24] and the need for energy security and diversity.

2. United States' interests

With 104 operating nuclear power plants the United States has the largest number of reactors, but over the last two decades there have been no major projects for building new ones. This forced domestic companies to focus on overseas markets. Given India's aims to enhance its nuclear power programme, the American nuclear industry actively lobbied for the passing of the United States–India Nuclear Cooperation Approval and Nonproliferation Enhancement Act[25] in both the U.S. Congress and Senate. It is estimated that if American vendors obtain at least two of the planned eight 1 000 MWe nuclear reactors in India by 2012, it could add 3 000 to 5 000 new direct jobs and 10 000 to 15 000 indirect jobs in the U.S., as well as business opportunities for U.S. companies, including General Electric and Westinghouse.[26]

The change in the United States' foreign policy after 11 September 2001 has also worked as a strong catalyst for the conclusion of the nuclear deal with India. Strategic changes in U.S. foreign policy came as a result of the challenges posed by global terrorism and the need for international co-operation to fight against it. The support given by India in containing the threats caused by the fundamentalist forces in Afghanistan, even before the deployment of the United Nations-mandated International Security Assistance Force (ISAF), also worked as a common platform for strengthening the relationship between India and the United States.

Economically and strategically the United States is now focussing its attention on Asia where it lacks strong alliances and presence, compared to its position in Europe and the Middle East. It became apparent that a "strategically stable Asia" can only be achieved if India is given a role on the international stage and is made part of the non-proliferation regime. This is evident from the importance given to the Next Steps in Strategic Partnership (NSSP) initiative launched in January 2004 covering initiatives in three specific areas, namely, civilian nuclear activities, civilian space programmes and high-technology trade. Vast economic growth together with India's strong and vibrant democracy makes it a natural ally for Western democracies.

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23. An average indigenously developed Indian reactor is of 220 MWe which is small when compared with other countries.

24. India ratified the Kyoto Protocol on 26 August 2002 which entered into force on 16 February 2005.

25. United States-India Nuclear Cooperation Approval and Nonproliferation Enhancement Act, Pub. L. No. 110-369 (8 October 2008), available at www.govtrack.us/congress/billtext.xpd?bill=h110-7081.

26. U.S. Department of State's Response to Questions for the Record Submitted by Chairman Tom Lantos House Committee on Foreign Affairs, See response to Questions 1 and 2, available at www.hcfa.house.gov/110/press090208.pdf.

III. 2005 Joint Statement and its implementation

The negotiations between India and the United States resulted in the Joint Statement between President George W. Bush and Prime Minister Manmohan Singh of 18 July 2005,[27] which provided a shared understanding through reciprocal bilateral and international co-operation to transform their existing relationship into a global partnership. Co-operation in nuclear energy is in the limelight of that statement even though it covers several areas such as economy, energy and environment, democracy and development, non-proliferation and security and high technology and space. The importance of the Joint Statement is that it recognises India's nuclear weapons programme and non-proliferation record by acknowledging its need for the same benefits and advantages as countries possessing advanced nuclear technologies.

The reciprocal commitments to nuclear energy, which are more political than legal, focus on the strengthening of the non-proliferation of weapons of mass destruction and on energy co-operation to overcome India's growing energy deficit. The main commitments on the part of India include:

- The identification and separation of civilian and military nuclear facilities in a phased manner.
- To place its civilian facilities under IAEA safeguards and sign an additional protocol.
- To continue its unilateral moratorium on nuclear testing.
- To work with the United States towards the conclusion of a multilateral Fissile Material Cut-Off Treaty.
- To refrain from the transfer of enrichment and reprocessing technologies to states that do not have them and to support international efforts to limit their spread.
- To ensure that the necessary steps have been taken to secure nuclear materials and technology through comprehensive export control legislation and through harmonisation and adherence to the Missile Technology Control Regime (MTCR) and the Nuclear Suppliers Group (NSG) guidelines.

The commitments on the part of United States include:

- To work to achieve full civil nuclear energy co-operation with India as it realises its goals of promoting nuclear power and achieving energy security.
- To seek agreement from Congress to adjust U.S. laws and policies and work with allies to adjust international regimes to enable full civil nuclear energy co-operation and trade with India, including but not limited to expeditious consideration of fuel supplies for safeguarded nuclear reactors at Tarapur.
- To consult with its partners regarding India's participation in the International Thermonuclear Experimental Reactor (ITER) project and in the Generation IV International Forum with a view toward India's inclusion.

27. Text of the 2005 Joint Statement is reproduced on page 29 of this Bulletin.

The 2005 Joint Statement lays the cornerstone for successive agreements, statements and acts at the national, bilateral and international level.

1. The Hyde Act

The so called Hyde Act of 2006[28] enacted by the United States Congress consisted of two titles, the "Henry J. Hyde United States-India Peaceful Atomic Energy Cooperation Act of 2006" and the "United States Additional Protocol Implementation Act". The former dealt with nuclear co-operation with India, and the latter related to the implementation of the additional protocol in the U.S.

The Hyde Act, introduced by the former Republican member of the U.S. House of Representatives Henry J. Hyde, modified the requirements under the U.S. Atomic Energy Act to allow for the proposed nuclear co-operation agreement with India and to implement the 2005 Joint Statement. Even though the act has no authority over India, it provided the U.S. administration with a framework for engaging with India in order to achieve its commercial and strategic interests. The four key goals of the act, as pointed out by the U.S. President are:[29]

1) The strengthening of energy co-operation between India and United States will provide the foundation for a new strategic partnership.

2) The promotion of economic growth which will allow investment from American businesses in India's civilian nuclear industry creating new jobs in America as well as new customers abroad.

3) Environmental protection by helping India to reduce emissions from coal based electricity generation through nuclear power generation.

4) Safeguarding American non-proliferation interests by opening Indian civilian nuclear facilities to international inspection.

The Hyde Act identifies preventing the proliferation of nuclear weapons and other weapons of mass destruction, including the means to produce and deliver them, as critical objectives of United States foreign policy.[30] The act recognises the implementation of the Non-Proliferation Treaty as a keystone of U.S. non-proliferation policy since it was successful in preventing the acquisition of nuclear weapons and maintaining a stable international security situation. Moreover, it highlights the potential challenges to the global non-proliferation regime posed by countries outside the NPT since they do not have any obligations under the NPT.[31] Nevertheless, the act sees U.S. interests as protected when entering into an agreement with a non-NPT country under Section 123 of the Atomic Energy Act of 1954 if, a) the country has demonstrated responsible behaviour regarding the non-proliferation of technology related to nuclear weapons, b) the country has a functioning and uninterrupted democratic system of government with a foreign policy which is congruent to that of the U.S., c) the country is induced to improve protection against the proliferation of nuclear technology

28. *Op.cit.*, the act passed by the 109th Congress in its 2nd Session included the Hyde Act and the United States Additional Protocol Implementation Act.

29. US President George W. Bush's Statement at the signing of the Henry J. Hyde US-India Peaceful Atomic Energy Cooperation Act.

30. Section 102(1) of the Hyde Act.

31. *Ibid*, Section 102(4).

related to nuclear weapons and refrain from actions to further its nuclear weapon programme and d) it provides greater political and material support to U.S. global and regional non-proliferation objectives.[32]

With respect to South Asia, the act acknowledges the need for containing the risk of proliferation or a regional arms race as well as the need for a moratorium on the production of fissile material for explosive purposes by India, Pakistan and the People's Republic of China.[33] Other major policy initiatives include concluding a treaty banning the production of fissile material for nuclear weapons to which both India and the U.S. shall be parties and securing India's participation in the Proliferation Security Initiative, implementing export control laws in line with the Wassenaar Arrangements and finally, the ratification of or accession to the Convention on Supplementary Compensation of 12 September 1997.[34]

The act further authorises the U.S. President to make a "determination" in order to waive the requirements under Section 123 of the Atomic Energy Act which are based on steps taken by India to provide a credible plan:

- To separate civil and military nuclear facilities, materials and programmes.
- To file a declaration regarding its civil facilities and materials with the IAEA.
- To place its civilian nuclear facilities under IAEA safeguards in perpetuity.
- To make progress in the conclusion of an additional protocol with IAEA.
- To work with and support the U.S. and international efforts to prevent the spread of advanced nuclear technology (enrichment and reprocessing technology) to any state that does not already possess them.
- To conclude a multilateral treaty on the cessation of the production of fissile materials and to enact and enforce a comprehensive export control regime.

Finally, the waiver requires an NSG decision by consensus to permit the supply to India of nuclear items covered by its guidelines.[35]

One of the major implications of this act for India is the obligation on the U.S. President to inform fully and currently the appropriate congressional committees of any significant Indian nuclear activities. This also includes "significant changes in the production by India of nuclear weapons or in the types or amounts of fissile material produced; and changes in the purpose or operational status of any unsafeguarded nuclear fuel cycle activities in India".[36] Moreover, the President has to submit an annual report covering India's nuclear activities, its compliance with U.S. policies and possible fissile

32. *Ibid*, Section 102(5) and (6).
33. *Ibid*, Section 103(b).
34. *Ibid*, Section 103(b) (3).
35. *Ibid*, Section 104(a) and (b).
36. *Ibid*, Section 104(g)(1)(C) and (D).

material production together with the annual reports on proliferation prevention[37] and progress towards regional non-proliferation.[38] Thus, even though the act is U.S. domestic legislation, it brings Indian nuclear activities in relation to foreign countries and in relation to developing fissile materials for nuclear weapons indirectly into the purview of the nuclear co-operation agreement. However, the Indian position[39] regarding the annual report is that it is against the letter and spirit of the 2005 Joint Statement, since the need for certification turns the permanent waiver into an annual one.

2. India's Separation Plan

India's most crucial commitment is the identification and separation of its civilian and military nuclear facilities and programmes in a phased manner which is a requisite under the 2005 Joint Statement. To this end it laid out a Separation Plan[40] of 2 March 2006 designed to provide guidance to the separation process. The plan outlines that the Indian nuclear programme was intertwined with civilian and military initiatives and the fact that its strategic programme is embedded in a larger undifferentiated programme. The identification of purely civilian facilities without any strategic implications poses a particular challenge to India since it has developed its nuclear programme without a dedicated military approach.

The separation of civilian nuclear facilities is to be carried out in a credible, feasible and implementable manner. The plan provides that the separation is to be consistent with India's national security as well as its research and development requirements, without being prejudicial to the three-stage nuclear programme.[41] Moreover, the plan stresses that it is India's decision to determine civilian facilities and accept IAEA safeguards based on the principle of reciprocity since the reciprocal actions by the U.S. to lift trade restrictions depend on the application of IAEA safeguards.

The main criterion for subjecting a facility to IAEA safeguards will thus be its impact on India's national security and whether it has any strategic significance. In this respect, a civilian facility will not be placed under IAEA safeguards if it is located in a larger hub of strategic significance. For this reason, the Indian Government decided to permanently shut down the CIRUS research reactor in 2010 and to shift the fuel core of the APSARA research reactor, obtained from France, to place it under safeguards by 2010. These reactors were part of the Bhabha Atomic Research Centre (BARC) which is treated as a larger hub of strategic significance. The major features of the identified separation plan are as follows:

- India will identify and accept IAEA safeguards for 14 thermal power reactors between 2006 and 2014.

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37. Annual Report on Proliferation Prevention under Section 601(a) of the Nuclear Non-Proliferation Act of 1978.

38. Annual Report on Progress Toward Regional Non-Proliferation under Section 601(a) of the Foreign Assistance Act.

39. Statement of Indian Prime Minister in Rajya Sabha (Council of States, the Indian Parliament's Upper House) on the India-U.S. Nuclear Agreement on 17 August 2006 at Paragraph 13(iii), available at www.pmindia.nic.in/speech/content.asp?id=367.

40. Implementation of the India-United States Joint Statement of 18 July 2005: India's Separation Plan, tabled by the Government of India before the Indian Parliament on 11 May 2006, INFCIRC/731 of 25 July 2008; text is reproduced on page 33 of this Bulletin.

41. *Ibid*.

- It will not accept safeguards on the fast breeder programme, including the Prototype Fast Breeder Reactor (PFBR) and the Fast Breeder Reactor (FBTR) which are at the research and design stage.

- It will place all future thermal power reactors and civilian breeder reactors under safeguards.

- Reprocessing and enrichment capabilities together with other facilities associated with the strategic programme's fuel cycle will not be part of the separation plan.

- The separation is linked to the United States' assurances regarding fuel supplies and its guarding against any future disruption of fuel supplies.

3. U.S.-India Nuclear Cooperation Agreement

The U.S.-India Nuclear Cooperation Agreement of 27 July 2007[42] constitutes the legally binding instrument and establishes the necessary legal framework following the political commitments of the 2005 Joint Statement. It is also called 123 agreement since the United States entered into the agreement in accordance with Section 123 of the U.S. Atomic Energy Act.[43]

In the preamble, the parties affirm that the co-operation is to take place between two states with advanced nuclear technology, both having the same benefits and advantages and both committed to preventing weapons of mass destruction.[44] The agreement reflects their desire to develop co-operation based on mutual respect for sovereignty, non-interference in internal affairs, equality, mutual benefit, reciprocity and due respect for each other's nuclear programmes.

The scope of the agreement covers only the peaceful uses of nuclear energy and its purpose is defined as enabling full civil nuclear energy co-operation. The term *full* has been questioned as being too ambiguous;[45] however the relevant areas of co-operation are defined in Article 2.2. as not intended to be exclusive. Whether other areas will fall under *full* co-operation under this agreement will be subject to interpretation based on the intention or assumed intention of the parties. In legal terms the reference to *full* may serve as an indication for inclusion. However, as to dispute settlement (see Article 15 of the agreement), it is clear that political and economic implications will be stronger than a strict interpretation of the literal words.

The agreement also provides a detailed framework regarding the transfer of information on issues as broad as, for example, "research, development, design, construction, operation, maintenance and use of reactors, reactor experiments, and decommissioning" [Article 3(a)] while allowing each party to define restricted data which shall not be transferred [Article 3(4)]. Nuclear trade is subject to Article 4 of the agreement requiring the parties to facilitate both nuclear trade between themselves and

42. Agreement for Cooperation Between the Government of the United States of America and the Government of India concerning peaceful uses of nuclear energy ("123 agreement"). Text of the 123 agreement is reproduced on page 41 of this Bulletin.

43. Text of Section 123 of the U.S. Atomic Energy Act is reproduced on page 87 of this Bulletin.

44. Preamble of the 123 agreement.

45. Rao, K. R., "Present scenario of the nuclear deal", *Current Science*, Vol. 93, No. 5, 10 September 2007.

trade between third countries and either party, whereas the actual party to reach out to third countries (especially the NSG members) is the United States. In order to accelerate trade, the parties also agree that authorisations, including export and import licences, should not be used to restrict trade and to inform and consult each other should the authorisations not be granted within a two and four months period respectively [Article 4(2)]. Article 5 deals with the transfer of nuclear material, non-nuclear material, equipment and components, limiting the transfer of special fissionable material to low enriched uranium except for small quantities. In this article, the United States conveys its commitment to the reliable supply of fuel to India and to create the necessary conditions for India to have assured and full access to fuel for its reactors. To this end, the U.S. commits itself to adjust its domestic laws and practices of the NSG.[46]

The agreement includes a mechanism to prevent the disruption of fuel supplies in such a manner that the United States agreed to take additional steps to further guard against disruption, according to Article 5(6)(b)(i)-(iv):

- To incorporate fuel supply assurance in the agreement that would be submitted to the U.S. Congress.
- To join India in seeking to negotiate with the IAEA an India-specific fuel supply agreement.
- To support Indian effort to develop a strategic reserve of nuclear fuel;
- To jointly convene a group of friendly supplier countries such as Russia, France and the United Kingdom to pursue such measures as would restore fuel supply to India.

Even though the United States treats these commitments as political, based on the U.S.-India Initiative,[47] the agreement technically provides India with the option to obtain a lifetime supply of fuel; first, through the development of a strategic reserve [Article 2(2)(e)], secondly by nuclear material transfer for the lifetime operation of reactors [Article 5(4)], thirdly through corrective measures according to Article 5(6)(c), and fourthly through continued validity of commitments even after the agreement is terminated [Article 16(3)].

Article 6 provides for nuclear fuel cycle activities including enrichment up to 20% in the isotope 235 of uranium, and irradiation of plutonium, uranium-233, high enriched uranium and irradiated nuclear material transferred as a result of the agreement. India can further reprocess or alter the form or content of material transferred with the consent of the U.S. provided India establishes a new national reprocessing facility for reprocessing IAEA safeguarded nuclear material.

The peaceful use of nuclear materials, equipment and components transferred pursuant to the agreement is reaffirmed by prohibiting their use for any explosive device or research and development or for any military purpose.[48] Moreover, safeguards will be maintained as long as the material or equipment transferred pursuant to the agreement remains in the jurisdiction of the co-operating

46. Article 5.6(a) of the 123 agreement.

47. Modified Reporting to Congress under Section 105, The United States-India Nuclear Cooperation Approval and Non-proliferation Enhancement Act. See also U.S. Department of State's Response to Questions for the Record Submitted by Chairman Tom Lantos House Committee on Foreign Affairs, See response to Question 16.

48. *Ibid*, Article 9.

country, a provision in fact aimed at India only.[49] In effect, the application of safeguards in perpetuity to nuclear materials, components and technology obtained or produced as a result of the agreement as well as the commitment not to divert it for any military purpose or for developing nuclear explosive devices is the foundation of the nuclear co-operation.

The key commitments for India include separation of nuclear installations between military and peaceful uses as well as entering into India-specific IAEA safeguard agreements.[50] In return, the United States provides assurance regarding the creation of the necessary conditions to have full access to fuel India's reactors.[51]

Going beyond its strict scope, the agreement also addresses environmental protection and commits the parties to co-operate in following best practices for minimising the impact on the environment of any radioactive, chemical or thermal contamination arising from peaceful nuclear activities (Article 11).

The agreement shall remain in force for a period of 40 years with additional periods of 10 years, and both parties have the option to terminate prior to its expiry by giving one year's advance written notice to the other party. The termination and cessation of co-operation are covered in great detail in Article 14 with the aim to possibly consult and continue co-operation so that it can be developed on a stable, reliable and predictable basis.[52] The United States would only contemplate terminating the agreement as an extreme measure limiting to certain specific instances.[53] The commitment on either party to avoid any action that affects the co-operation under Article 2 and the need for consultation regarding non-compliance demonstrate the confidence in the emerging alliance between India and the United States.

4. India-specific IAEA safeguards agreement

The U.S.–India Nuclear Cooperation Agreement, based on the 2005 Joint Statement, resulted in the required[54] agreement between the IAEA and the Government of India for the application of safeguards to civilian nuclear facilities of 7 July 2008 (India-specific IAEA safeguards agreement).[55] The 35-nation IAEA Board of Governors approved the India-specific IAEA safeguards agreement by consensus on 1 August 2008.[56]

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49. *Ibid*, Article 10.

50. *Ibid*, Article 10.

51. *Ibid*, Article 5(6)(a). In this respect under Article 5(6)(c), the India-specific IAEA safeguards agreement guards against withdrawal of safeguarded nuclear material from civilian use and also allows India to take corrective measures for uninterrupted operation of its civilian nuclear reactors in the event of disruption of foreign fuel supplies.

52. *Ibid*, Article 13.

53. U.S. Department of State's Response to Questions for the Record Submitted by Chairman Tom Lantos House Committee on Foreign Affairs, See response to Question 16.

54. Article 5(6)(c) of the 123 agreement.

55. An Agreement with the Government of India for the Application of Safeguards to Civilian Nuclear Facilities of 7 July 2008 (GOV/2008/30). Text of the agreement is reproduced on page 57 of this Bulletin and may be found at www.hcfa.house.gov/110/press091108g.pdf.

56. See summary note on page 27 of this Bulletin.

Carrying out safeguards is a statutory function of the IAEA.[57] Article III.A.5 of the IAEA Statute authorises the agency to "establish and administer safeguards designed to ensure that special fissionable and other materials…. are not used in such a way as to further any military purpose; and to apply safeguards, at the request of the parties, to any bilateral or multilateral arrangement, or at the request of a State, to any of that State's activities in the field of atomic energy".

The India-specific IAEA safeguards agreement is based on the IAEA's INFCIRC/66-type safeguards agreement[58] for facilities of non-NPT signatories brought under safeguards either unilaterally or under some bilateral or multilateral co-operation agreement. It is also called an "umbrella" agreement since it provides that any facility notified by India to the IAEA over time will become subject to safeguards under the agreement.[59]

India's basic undertaking is to ensure that none of the items subject to the safeguards agreement (defined in paragraph 11) "shall be used for the manufacture of any nuclear weapon or to further any other military purpose and that such items shall be used exclusively for peaceful purposes and shall not be used for the manufacture of any nuclear explosive device". The reciprocal undertaking on the part of the agency is to apply safeguards to the items and "to ensure that no such item is used for the manufacture of any nuclear weapon or to further any other military purpose and that such items are used exclusively for peaceful purposes and not for the manufacture of any nuclear explosive device", paragraphs 1 and 2.

The purpose of safeguards under the agreement is "to guard against withdrawal of safeguarded nuclear material from civilian use at any time" and to facilitate the implementation of relevant bilateral or multilateral arrangements to which India is a party.[60]

As to termination, paragraph 29 of the India-specific IAEA safeguards agreement refers to the provisions of GOV/1621 of 20 August 1973 according to which safeguards are for an unlimited time and a unilateral termination of safeguards is not possible until any supplied material and items have been removed from the inventory. Accordingly, paragraph 32 provides that safeguards shall be terminated on a facility after both India and the IAEA have jointly determined that the facility is no longer usable for any nuclear activity from a safeguards point of view.

Commentators criticised the note in the preamble of the India-specific IAEA safeguards agreement that "India may take corrective measures to ensure uninterrupted operation of its civilian nuclear reactors in the event of disruption of foreign fuel supplies".[61] The terms *corrective measures* have been questioned as too ambiguous, leaving room for the interpretation that India could withdraw certain facilities from the scope of the agreement if fuel supplies to India are interrupted. However, the preamble of a legal instrument cannot be interpreted against the express and more specific provisions on termination as well as the reference to GOV/1621.

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57. Buechler, C., "The future of safeguards under INFCIRC/66/Rev.2", *IAEA Bulletin*, 1/1988.

58. INFCIRC/66/Rev.2.

59. Paragraph 14 of the India-specific IAEA safeguards agreement.

60. *Ibid*, Paragraphs 3 and 4.

61. Kimball, D.G., McGoldrick, F., Scheineman, L., "IAEA-Indian Nuclear Safeguards Agreement: A Critical Analysis", published on Arms Control Association, www.armscontrol.org.

5. NSG Statement

Following the conclusion and approval of the India-specific IAEA safeguards agreement on 6 September 2008, the Nuclear Suppliers Group (NSG) unanimously adopted a policy to allow its participating governments civil nuclear co-operation with India, the so called Statement on Civil Nuclear Cooperation with India.[62]

The 1974 explosion of nuclear warheads by India triggered the termination of most international civil assistance to India, it lead to the 1978 U.S. Nuclear Non-proliferation Act requiring full-scope safeguards as a condition of nuclear supply and finally it triggered the creation of the Nuclear Suppliers Group whose identity is closely linked to India. The NSG is a group of nuclear supplier countries which seeks to contribute to the non-proliferation of nuclear weapons through the implementation of guidelines for nuclear exports and nuclear related exports.[63]

The NSG applies two sets of guidelines which aim "to ensure that nuclear trade for peaceful purposes does not contribute to the proliferation of nuclear weapons or other nuclear explosive devices which would not hinder international trade and cooperation in the nuclear field".[64] The Guidelines for Nuclear Transfer[65] governs the export of items that are especially designed or prepared for nuclear use, and the second set constitutes the Guidelines for Transfers of Nuclear-Related Dual-Use Equipment, Materials, Software and Related Technology.[66]

As an exception to its guidelines, NSG participating governments have adopted a policy to allow civil nuclear co-operation with the IAEA-safeguarded Indian civil nuclear programme. The statement highlights the voluntary commitments by India, such as its unilateral moratorium on nuclear testing, its separation of civilian nuclear facilities in a phased manner, the conclusion of a safeguards agreement with the IAEA, the commitment to sign and adhere to an additional protocol with respect to India's civil nuclear facilities, refraining from transferring enrichment and reprocessing technology, instituting a national export control system and harmonising its export control lists and guidelines with NSG guidelines.

Participating governments may now transfer trigger list items and/or related technology and transfer nuclear-related dual-use equipment, materials, software and related technology to India for peaceful purposes and for use in IAEA safeguarded civil nuclear facilities. They shall notify each other of approved transfers of A and B items (listed in INFCIRC/254/Part 2 as revised) and they are invited to exchange information.

6. U.S.-India Nuclear Cooperation Approval and Nonproliferation Enhancement Act

On 8 October 2008, the U.S. Congress passed the United States-India Nuclear Cooperation Approval and Nonproliferation Enhancement Act.[67]

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62. INFCIRC/734 (Corrected); statement is reproduced on page 83 of this Bulletin. See also the summary note on page 28 of this Bulletin.

63. www.nuclearsuppliersgroup.org.

64. www.nuclearsuppliersgroup.org/guide.htm.

65. INFCIRC/254, Part 1.

66. INFCIRC/254, Part 2.

67. *Op.cit*., See also the summary note on page 27 of this Bulletin.

This act gives congressional approval to the U.S.-India Nuclear Cooperation Agreement and also strengthens the United States' non-proliferation laws relating to peaceful nuclear co-operation. The act urges the Government of India to sign and adhere to an additional protocol with the IAEA at the earliest possible date (Section 103). The U.S. Nuclear Regulatory Commission may issue licences for transfers to India, once the India-specific IAEA safeguards agreement has entered into force and India has filed a declaration of its civilian nuclear facilities under IAEA safeguards (Section 104). Further, Section 123 of the Atomic Energy Act is amended by adding a paragraph which obliges the President to keep the Foreign Affairs Committees of House and Senate fully and currently informed of any initiatives or negotiations relating to agreements pursuant to this section.[68]

IV. Nuclear deal and non-proliferation issues

The 123 agreement has *de facto* uplifted India to the status of a nuclear weapon state under the Non-proliferation Treaty without its being a party to it. Moreover, the NSG waiver of 6 September 2008 removes completely the restrictions placed on NSG participating countries for nuclear co-operation with India. However, the dual-use of nuclear technology for military as well as peaceful purposes together with the challenges raised by international terrorism has highlighted several issues that may dilute the existing principles of the international non-proliferation regime.

A main challenge to the NSG waiver was the possibility of similar claims coming from other countries, such as Pakistan, Iran and the Democratic People's Republic of Korea. However, the commitment shown by India on non-proliferation of nuclear technology and resources to countries having clandestine programmes distinguishes it from other countries. Even though there was no international obligation regarding transfers of indigenously developed technology, India was committed to preventing the spread of sensitive nuclear technology, even to Iran, with which it always enjoyed good bilateral relationships.[69]

The 2005 Joint Statement will further involve India in global non-proliferation efforts through specific commitments. The implementation of the 123 agreement will raise the total installed nuclear capacity under safeguards from the present 19% to 65%.[70] The agreement deviates from the strict approach to non-proliferation principles by acknowledging India's nuclear weapon capability and the availability of facilities covering the full nuclear fuel cycle for military purposes. Thus, it differentiates India from a non nuclear weapon state (NNWS) under the NPT by granting India the option to separate military nuclear facilities and to continuously operate them similar to the five nuclear weapon states.

Both the 123 agreement and the NSG Statement on Civil Nuclear Cooperation urge India to conclude an additional protocol regarding its civil nuclear facilities. It will be based on the 2005 Joint Statement which leaves the strategic programme outside its purview. The possible additional protocol will be modelled after those entered into by nuclear weapon states under the NPT. It will be a further evidence of India's position as a nuclear weapon state outside the NPT but operating within the guidelines imposed by the non-proliferation regime.

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68. Text of Section 123 of the Atomic Energy Act is reproduced on page 87 of this Bulletin.

69. The Guidelines for Nuclear Transfer (Exports) notified by the Indian Department of Atomic Energy [No. AEA/27(1)/2005-ER] reflect the export controls followed by Nuclear Suppliers Group and IAEA Safeguards.

70. India's Separation Plan, *op.cit.*, at No. 14 (i); text is reproduced on page 33 of this Bulletin.

In this respect, the allegation that the agreement would increase the availability of indigenous nuclear material for India's military programme shall be analysed. Following the agreement, India will place most of the existing civilian nuclear facilities, which earlier had strategic significance, under the additional protocol which provides the IAEA with additional information and access related to the absence of undeclared activities. Once it has been declared as a civilian nuclear facility, subject to the agreement, the safeguards can only be terminated through a joint determination by India and the IAEA or as per the agreement that the material is no longer usable.

In this regard, India's approach towards the expired U.S.-India Agreement for Peaceful Nuclear Cooperation of 1963 or the "Tarapur Agreement" is of significance. Initially, the United States supplied two nuclear reactors and low enriched uranium (LEU) fuel which was later discontinued due to the absence of full-scope IAEA safeguards under the Nuclear Non-Proliferation Act of 1978. India's voluntary application of IAEA safeguards over the reactors, after the expiry of the agreement in 1993, further underlines the non-proliferation commitments on the part of India.

The apprehension that the nuclear deal will fuel an arms race in the region needs careful consideration when analysing the unresolved boundary disputes between India and China on the one hand and the volatile relation with Pakistan on the other hand. International sanctions and export control regimes failed to prevent, *inter alia*, India's attainment of missile and advanced nuclear explosive technology which, in itself, demonstrates the ineffectiveness of conventional approaches. The agreement thus imparts the international non-proliferation principles into India's policies and imposes specific international commitments, even though right from the beginning the Indian nuclear weapons policy was based on the concept of a "credible minimum restraint" and "no first-use".

The non-proliferation efforts of the U.S. had originally been targeted against India and Pakistan but the nuclear co-operation between India and United States also brings China into the picture. For example the Hyde Act expressly recognises the need for a moratorium on the production of fissile material for nuclear explosive purposes by India, Pakistan and the People's Republic of China.[71] The absence of China in the listing of friendly supplier countries in case of a disruption of fuel supply to India[72] points at the strategic importance given to the agreement. Moreover, when India made a formal diplomatic protest against China with regard to its role in the NSG meeting, it resulted in the Statement on Civil Nuclear Cooperation with India.[73] This highlights the growing rivalry between the two emerging Asian powers even though there is rapid growth of bilateral co-operation in the commercial field. Thus, the U.S.-India nuclear co-operation, to an extent, acknowledges the role of the three countries to foster non-proliferation efforts in the region.

The 123 agreement does not explicitly touch upon the issue of a future nuclear test by India since any reference to it in the agreement would create a political backlash for the Indian government, putting the nuclear co-operation at risk. The NSG Statement on Civil Nuclear Cooperation explicitly recognises India's commitment to continue its unilateral moratorium on nuclear testing and its readiness to work with others towards the conclusion of a multilateral Fissile Material Cut-Off Treaty (FMCT) for co-operation.[74] The United States could invoke Article 14 of the 123 agreement in response to an Indian nuclear test, cease the nuclear co-operation and request the return of transferred

71. Section 103(b) of the Hyde Act.

72. Article 5. 6(b)(iv) of the 123 agreement.

73. NSG Waiver: India Issues Demarche to China, The Times of India, 7 September 2008, www.timesofindia.indiatimes.com/articleshow/3455968.cms.

74. NSG Statement, *op.cit*, at 2(g).

materials including fresh fuel. Thus, instead of abolishing the right to test nuclear devices, the agreement and related instruments indirectly refer to that right through responsibility, continued co-operation and commercial interests.

As far as the Indian government's stance on disarmament is concerned, it is based on the Rajiv Gandhi Action Plan[75] which provides commitments towards non-discriminatory global nuclear disarmament rather than regional non-proliferation or regional disarmament. Regarding the moratorium on the production of fissile material, India affirms its commitment to negotiate a Fissile Material Cut-Off Treaty but links its acceptance to the question of how far it addresses its security interests as well as the treaty's ability to provide a non-discriminatory, multilateral and internationally verifiable treaty. Furthermore, India treats its possession and development of nuclear weapons as an integral part of national security even though it has placed a unilateral voluntary moratorium on nuclear testing. All these issues highlight the need for a serious change in the international approach of promoting piecemeal regional non-proliferation or disarmament into a global disarmament and non-proliferation policy.

Conclusion

The 2005 Joint Statement and subsequent developments have opened up a new chapter in the international non-proliferation regime. Even though there is a general understanding that it creates a deviation from the existing non-proliferation principles, a careful analysis will reveal the importance given to those principles. As far as India is concerned it will lead to the end of nuclear isolation. For NSG participating governments it provides economic opportunities while paving the way for additional safeguards. The governments of France and the UK have already lifted their ban on nuclear-related exports to India following the decision by the NSG to allow the transfer of "trigger list" items to India for peaceful purposes.

The 123 agreement and its implementation also highlights the political commitments made by India and the United States, as India assumes responsibility through the continued unilateral moratorium on nuclear testing and adherence to non-proliferation principles in return for nuclear co-operation and commerce. The separation of the Indian military nuclear programme from IAEA safeguards and the NSG waiver to allow peaceful nuclear co-operation with India is an acknowledgement of India's position with respect to the Non Proliferation Treaty. The difficulty in supporting or rejecting the move by the two countries lies in the fact that on the one hand, the introduction of flexibility into the international regime might serve non-proliferation purposes by attracting states to *de facto* abide by its rules and *de jure* uphold their reservations. On the other hand, it undermines the regime by accepting *de facto* nuclear weapon states without penalties and with full access to nuclear co-operation and supplies by the most advanced and developed countries in the world.

75. This plan is based on the address titled "A World Free of Nuclear Weapons" given by then Indian Prime Minister Rajiv Gandhi at the United Nations General Assembly Special Session on Disarmament, New York on 9 June 1988, available at www.indianembassy.org/policy/Disarmament/disarm15.htm.

Summary Notes

United States

Legislation approving the U.S.-India 123 Agreement (2008)

On 8 October 2008, the U.S. Congress passed legislation approving the "Agreement for Cooperation Between the Government of the United States of America and the Government of India Concerning Peaceful Uses of Nuclear Energy", which the President signed into law.[1]

The agreement, negotiated in accordance with Section 123 of the Atomic Energy Act (AEA) of 1954, as amended (see *Nuclear Law Bulletin* Nos. 7 and 14),[2] and the Henry J. Hyde United States-India Peaceful Atomic Energy Cooperation Act of 2006,[3] provides a comprehensive framework for United States peaceful nuclear co-operation with India. The agreement permits the transfer of information, non-nuclear material, nuclear material, equipment (including reactors) and components for nuclear research and nuclear power production. It does not compel any particular co-operation.

The agreement will remain in effect for 40 years and will continue thereafter for additional periods of 10 years each unless either the United States or India gives notice of termination 6 months before the end of a period. Furthermore, either party can terminate the agreement prior to its expiration on one year's written notice to the other party. Should either party seek early termination, it has the right to immediately cease co-operation under the agreement if a mutually acceptable resolution of outstanding issues cannot be achieved through consultations. Should the agreement be terminated, key non-proliferation conditions and controls would remain in effect with respect to material and equipment subject to the agreement.

Apart from the U.S. Congress approval, key conditions of the U.S.-India nuclear co-operation agreement to come into effect were that India enters into an India-specific safeguards agreement with the IAEA [Article 10(2) of the 123 agreement] and that the Nuclear Suppliers Group approves an exemption for India from the NSG's export guidelines [Article 5(6)(a) of the 123 agreement]. Both conditions have been met (see next two notes).

International Atomic Energy Agency

Approval of India safeguards agreement by IAEA Board of Governors (2008)

The IAEA Board of Governors approved by consensus the nuclear safeguards agreement with India on 1 August 2008.

1. Pub. L. No. 110-369 (8 October 2008).
2. 42 U.S.C. § 2153.
3. Pub. L. No. 109-401 (18 December 2006).

The so called *Agreement between the Government of India and the IAEA for the Application of Safeguards to Civilian Nuclear Facilities* requests the IAEA to verify that certain declared Indian nuclear material and facilities are used only for peaceful purposes. The agreement is set to enter into force once the IAEA receives notification that India's statutory and/or constitutional requirements have been met. It will allow India to add facilities to be placed under IAEA safeguards over time.

In his address to the Board, IAEA Director General Dr. ElBaradei stated that the IAEA would begin to implement the new safeguards agreement in 2009, with the aim of bringing a total of 14 Indian reactors under agency safeguards by 2014. The IAEA currently applies safeguards to six Indian nuclear reactors under safeguards agreements concluded between 1971 and 1994.

More information is available at www.iaea.org/NewsCenter/News/2008/board010808.html.

Nuclear Suppliers Group

Statement on Civil Nuclear Co-operation with India (2008)

Forty-five participating governments of the Nuclear Suppliers Group (NSG) and the European Commission as an observer met on 4 to 6 September 2008 in Vienna to discuss a U.S. draft proposal on a statement on civil nuclear co-operation with India. On 6 September 2008, the NSG adopted such a statement by consensus.[4]

Provided that the provisions of the Guidelines for Nuclear Transfers and the Guidelines for Transfers of Nuclear-Related Dual-Use Equipment, Materials, Software and Related Technology (INFCIRC/254/Part 1 and Part 2 as revised) are met, participating governments may

- transfer trigger list items and/or related technology;[5]
- transfer nuclear-related dual-use equipment, materials, software and related technology[6]

to India for peaceful purposes and for use in IAEA safeguarded civil nuclear facilities. They shall notify each other of approved transfers of A and B items (listed in INFCIRC/254/Part 2 as revised) and they are invited to exchange information, including their bilateral agreements with India. The statement further requests the chairman to confer and consult with India in order to facilitate India's adherence to NSG guidelines and to remain current in its implementation of them.

The full statement is reproduced on page 83 of this Bulletin and available at www.iaea.org/Publications/Documents/Infcircs/2008/infcirc734c.pdf.

4. IAEA, *Information Circular*, INFCIRC/734 (Corrected): Communication dated 10 September 2008 received from the Permanent Mission of Germany to the Agency regarding a "Statement on Civil Nuclear Cooperation with India".

5. Notwithstanding paragraphs 4(a), 4(b) and 4(c) of INFCIRC/254/Rev.9/Part 1.

6. Notwithstanding paragraphs 4(a) and 4(b) of INFCIRC/254/Rev.7/Part 2.

Joint Statement Between President George W. Bush and Prime Minister Manmohan Singh of 18 July 2005*

Prime Minister Manmohan Singh and President Bush today declare their resolve to transform the relationship between their countries and establish a global partnership. As leaders of nations committed to the values of human freedom, democracy and rule of law, the new relationship between India and the United States will promote stability, democracy, prosperity and peace throughout the world. It will enhance our ability to work together to provide global leadership in areas of mutual concern and interest.

Building on their common values and interests, the two leaders resolve:

- To create an international environment conducive to promotion of democratic values, and to strengthen democratic practices in societies which wish to become more open and pluralistic.

- To combat terrorism relentlessly. They applaud the active and vigorous counterterrorism cooperation between the two countries and support more international efforts in this direction. Terrorism is a global scourge and the one we will fight everywhere. The two leaders strongly affirm their commitment to the conclusion by September of a UN comprehensive convention against international terrorism.

The Prime Minister's visit coincides with the completion of the Next Steps in Strategic Partnership (NSSP) initiative, launched in January 2004. The two leaders agree that this provides the basis for expanding bilateral activities and commerce in space, civil nuclear energy and dual-use technology.

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* www.whitehouse.gov/news/releases/2005/07/20050718-6.html.

Drawing on their mutual vision for the U.S.-India relationship, and our joint objectives as strong long-standing democracies, the two leaders agree on the following:

FOR THE ECONOMY

- Revitalize the U.S.-India Economic Dialogue and launch a CEO Forum to harness private sector energy and ideas to deepen the bilateral economic relationship.

- Support and accelerate economic growth in both countries through greater trade, investment, and technology collaboration.

- Promote modernization of India's infrastructure as a prerequisite for the continued growth of the Indian economy. As India enhances its investment climate, opportunities for investment will increase.

- Launch a U.S.-India Knowledge Initiative on Agriculture focused on promoting teaching, research, service and commercial linkages.

FOR ENERGY AND THE ENVIRONMENT

- Strengthen energy security and promote the development of stable and efficient energy markets in India with a view to ensuring adequate, affordable energy supplies and conscious of the need for sustainable development. These issues will be addressed through the U.S.-India Energy Dialogue.

- Agree on the need to promote the imperatives of development and safeguarding the environment, commit to developing and deploying cleaner, more efficient, affordable, and diversified energy technologies.

FOR DEMOCRACY AND DEVELOPMENT

- Develop and support, through the new U.S.-India Global Democracy Initiative in countries that seek such assistance, institutions and resources that strengthen the foundations that make democracies credible and effective. India and the U.S. will work together to strengthen democratic practices and capacities and contribute to the new U.N. Democracy Fund.

- Commit to strengthen cooperation and combat HIV/AIDS at a global level through an initiative that mobilizes private sector and government resources, knowledge, and expertise.

FOR NON-PROLIFERATION AND SECURITY

- Express satisfaction at the New Framework for the U.S.-India Defense Relationship as a basis for future cooperation, including in the field of defense technology.

- Commit to play a leading role in international efforts to prevent the proliferation of Weapons of Mass Destruction. The U.S. welcomed the adoption by India of legislation on WMD (Prevention of Unlawful Activities Bill).

- Launch a new U.S.-India Disaster Relief Initiative that builds on the experience of the Tsunami Core Group, to strengthen cooperation to prepare for and conduct disaster relief operations.

FOR HIGH-TECHNOLOGY AND SPACE

- Sign a Science and Technology Framework Agreement, building on the U.S.-India High-Technology Cooperation Group (HTCG), to provide for joint research and training, and the establishment of public-private partnerships.

- Build closer ties in space exploration, satellite navigation and launch, and in the commercial space arena through mechanisms such as the U.S.-India Working Group on Civil Space Cooperation.

- Building on the strengthened nonproliferation commitments undertaken in the NSSP, to remove certain Indian organizations from the Department of Commerce's Entity List.

Recognizing the significance of civilian nuclear energy for meeting growing global energy demands in a cleaner and more efficient manner, the two leaders discussed India's plans to develop its civilian nuclear energy program.

President Bush conveyed his appreciation to the Prime Minister over India's strong commitment to preventing WMD proliferation and stated that as a responsible state with advanced nuclear technology, India should acquire the same benefits and advantages as other such states. The President told the Prime Minister that he will work to achieve full civil nuclear energy cooperation with India as it realizes its goals of promoting nuclear power and achieving energy security. The President would also seek agreement from Congress to adjust U.S. laws and policies, and the United States will work with friends and allies to adjust international regimes to enable full civil nuclear energy cooperation and trade with India, including but not limited to expeditious consideration of fuel supplies for safeguarded nuclear reactors at Tarapur. In the meantime, the United States will encourage its partners to also consider this request expeditiously. India has expressed its interest in ITER and a willingness to contribute. The United States will consult with its partners considering India's participation. The United States will consult with the other participants in the Generation IV International Forum with a view toward India's inclusion.

The Prime Minister conveyed that for his part, India would reciprocally agree that it would be ready to assume the same responsibilities and practices and acquire the same benefits and advantages as other leading countries with advanced nuclear technology, such as the United States. These responsibilities and practices consist of identifying and separating civilian and military nuclear facilities and programs in a phased manner and filing a declaration regarding its civilians facilities with the International Atomic Energy Agency (IAEA); taking a decision to place voluntarily its civilian nuclear facilities under IAEA safeguards; signing and adhering to an Additional Protocol with respect to civilian nuclear facilities; continuing India's unilateral moratorium on nuclear testing; working with the United States for the conclusion of a multilateral Fissile Material Cut-Off Treaty; refraining from transfer of enrichment and reprocessing technologies to states that do not have them and supporting international efforts to limit their spread; and ensuring that the necessary steps have been taken to secure nuclear materials and technology through comprehensive export control legislation and through harmonization and adherence to Missile Technology Control Regime (MTCR) and Nuclear Suppliers Group (NSG) guidelines.

The President welcomed the Prime Minister's assurance. The two leaders agreed to establish a working group to undertake on a phased basis in the months ahead the necessary actions mentioned above to fulfill these commitments. The President and Prime Minister also agreed that they would review this progress when the President visits India in 2006.

The two leaders also reiterated their commitment that their countries would play a leading role in international efforts to prevent the proliferation of weapons of mass destruction, including nuclear, chemical, biological and radiological weapons.

In light of this closer relationship, and the recognition of India's growing role in enhancing regional and global security, the Prime Minister and the President agree that international institutions must fully reflect changes in the global scenario that have taken place since 1945. The President reiterated his view that international institutions are going to have to adapt to reflect India's central and growing role. The two leaders state their expectations that India and the United States will strengthen their cooperation in global forums.

Prime Minister Manmohan Singh thanks President Bush for the warmth of his reception and the generosity of his hospitality. He extends an invitation to President Bush to visit India at his convenience and the President accepts that invitation.

Implementation of the India-United States Joint Statement of July 18, 2005: India's Separation Plan*

The resumption of full civilian nuclear energy cooperation between India and the United States arose in the context of India's requirement for adequate and affordable energy supplies to sustain its accelerating economic growth rate and as recognition of its growing technological prowess. It was preceded by discussions between the two Governments, particularly between President Bush and Prime Minister Manmohan Singh, of the global energy scenario and the long-term implications of increasing pressure on hydrocarbon resources and rising oil prices. These developments led to the announcement in April 2005 of an Indo-U.S. Energy Dialogue that encompassed the entire spectrum of energy options ranging from oil and gas to coal, alternative fuels and civilian nuclear energy. Through the initiation of a sustained dialogue to address energy security concerns, the two countries sought to promote stable, efficient, predictable and cost effective solutions for India's growing requirements. At the same time, they also agreed on the need to develop and deploy cleaner, more efficient, affordable and diversified energy technologies to deal with the environmental implications of energy consumption. India had developed proven and wide-ranging capabilities in the nuclear sector, including over the entire nuclear fuel cycle. It is internationally recognized that India has unique contributions to make to international efforts towards meeting these objectives. India has become a full partner in ITER, with the full support of the U.S. and other partners. India also accepted the U.S. invitation to join the initiative on Clean Development Partnership.

2. Noting the centrality of civilian nuclear energy to the twin challenges of energy security and safeguarding the environment, the two Governments agreed on 18 July 2005 to undertake reciprocal commitments and responsibilities that would create a framework for the resumption of full cooperation in this field. On its part, the United States undertook to:

   - Seek agreement from the Congress to adjust U.S. laws and policies to achieve full civil nuclear energy cooperation.
   - Work with friends and allies to adjust international regimes to enable full civil nuclear energy cooperation and trade with India, including but not limited to expeditious consideration of fuel supplies for safeguarded nuclear reactors at Tarapur.
   - In the meantime, encourage its partners to consider fuel supply to Tarapur expeditiously.
   - To consult with its partners to consider India's participation in ITER.
   - To consult with other participants in the Generation IV International Forum with a view towards India's inclusion.

3. India had conveyed its readiness to assume the same responsibilities and practices and acquire the same benefits and advantages as other leading countries with advanced nuclear technology, such as the United States. Accordingly, India for its part undertook the following commitments:

   - Identifying and separating civilian and military nuclear facilities and programmes in a phased manner.
   - Filing a declaration regarding its civilian facilities with the IAEA.

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* Reproduction of the text as submitted to the IAEA, *Information Circular*, INFCIRC/731: Communication dated 25 July 2008 received from the Permanent Mission of India concerning a document entitled "Implementation of the India-United States Joint Statement of July 18, 2005: India's Separation Plan".

- Taking a decision to place voluntarily its civilian nuclear facilities under IAEA safeguards, and

- Signing and adhering to an Additional Protocol with respect to civilian nuclear facilities.

4. Other commitments undertaken by India have already been fulfilled in the last year. Among them are:

   - India's responsible non-proliferation record, recognized by the U.S., continues and is reflected in its policies and actions.
   - The harmonization of India's export controls with NSG and MTCR Guidelines even though India is not a member of either group. These guidelines and control lists have been notified and are being implemented.
   - A significant upgrading of India's non-proliferation regulations and export controls has taken place as a result of the Weapons of Mass Destruction Act of May 2005. Inter-Ministerial consultations are ongoing to examine and amend other relevant Acts as well as framing appropriate rules and regulations.
   - Refrain from transfer of enrichment and reprocessing technologies to states that do not have them and supporting international efforts to limit their spread. This has guided our policy on non-proliferation.
   - Continued unilateral moratorium on nuclear testing, and
   - Willingness to work with the United States for the conclusion of a multilateral Fissile Material Cut-Off Treaty.

5. The Joint Statement of 18 July 2005, recognized that India is ready to assume the same responsibilities and practices as other leading countries with advanced nuclear technology, such as the United States. India has an impeccable record in non-proliferation. The Joint Statement acknowledges that India's nuclear programme has both a military and a civilian component. Both sides had agreed that the purpose was not to constrain India's strategic programme but to enable resumption of full civil nuclear energy cooperation in order to enhance global energy and environmental security. Such cooperation was predicated on the assumption that any international civil nuclear energy cooperation (including by the U.S.) offered to India in the civilian sector should, firstly, not be diverted away from civilian purposes, and secondly, should not be transferred from India to third countries without safeguards. These concepts will be reflected in the Safeguards Agreement to be negotiated by India with IAEA.

6. India's nuclear programme is unique as it is the only state with nuclear weapons not to have begun with a dedicated military programme. It must be appreciated that the strategic programme is an offshoot of research on nuclear power programme and consequently, it is embedded in a larger undifferentiated programme. Identification of purely civilian facilities and programmes that have no strategic implications poses a particular challenge. Therefore, facilities identified as civilian in the Separation Plan will be offered for safeguards in phases to be decided by India. The nature of the facility concerned, the activities undertaken in it, the national security significance of materials and the location of the facilities are factors taken into account in undertaking the separation process. This is solely an Indian determination.

7. The nuclear establishment in India not only built nuclear reactors but promoted the growth of a national industrial infrastructure. Nuclear power generation was envisaged as a three-stage programme with PHWRs chosen for deployment in the first stage. As indigenous reactors were

set up, several innovative design improvements were carried out based on Indian R&D and a standardized design was evolved. The research and technology development spanned the entire spectrum of the nuclear fuel cycle including the front end and the back end. Success in the technologies for the back end of the fuel cycle allowed us to launch the second stage of the programme by constructing a Fast Breeder Test Reactor. This reactor has operated for 20 years based on a unique carbide fuel and has achieved all technology objectives. We have now proceeded further and are constructing a 500 MWe Prototype Fast Breeder Reactor. Simultaneously, we have launched design and development of reactors aimed at thorium utilization and incorporating inherent safety features.

8. Concepts such as grid connectivity are not relevant to the separation exercise. Issues related to fuel resource sustainability, technical design and economic viability, as well as smooth operation of reactors are relevant factors. This would necessitate grid connectivity irrespective of whether the reactor concerned is civilian or not civilian.

9. It must be recognized that the Indian nuclear programme still has a relatively narrow base and cannot be expected to adopt solutions that might be deemed viable by much larger programmes. A comparison of the number of reactors and the total installed capacity between India and the P-5 brings this out graphically:

Country	Number of reactors	Total installed capacity
India	15	3.04 GWe (2.8% of the total production)
USA	104 (103 operational)	99.21 GWe (19.9% of the total production)
France	59	63.36 GWe (78.1% of the total production)
UK	23	11.85 GWe (19.4% of the total production)
Russia	31	21.74 GWe (15.6% of the total production)
China	9	6.602 GWe (2.2% of the total production)

Source: Nuclear Energy Institute, Washington DC.

10. Another factor to be taken into account is the small capacity of the reactors produced indigenously by India, some of which would remain outside safeguards. Therefore, in assessing the extent of safeguards coverage, it would be important to look at both the number of reactors and the percentage of installed capacity covered. An average Indian reactor is of 220 MW and its output is significantly smaller than the standards reactor in a P-5 economy. The chart below illustrates this aspect:

Country	Most common reactor	Number of such reactors
India	PHWRs 220 MWe	12
USA	69 PWRs and 34 BWRs	Most plants are in the range of range of 1 000-1 250 MWe 51 Reactors in the range of 1 000 MWe to 1 250 MWe
France	PWRs of 900 MWe and 1 300 MWe size	34 PWrs of 900 MWe and 20 PWRs of 1 300 MWe
UK	No standard size. AGR is the most common in the range of 600-700 MWe	14 AGRs

Country	Most common reactor	Number of such reactors
Russia	3rd Generation VVER-1 000 PWRs and RBMK 1 000 Light Water Graphite Reactors	9 third Generation VVER 1 000 PWRs and 11 RBMK 1 000 Light Water Graphite Reactors
China	PWRs 984 MWe	Four

Source: Uranium Information Centre, Melbourne.

11. The complexity of the separation process is further enhanced by the limited resources that India has devoted to its nuclear programme as compared to P-5 nations. Moreover, as India expands international cooperation, the percentage of its thermal power reactor installed capacity under safeguards would rise significantly as fresh capacity is added through such cooperation.

12. India's approach to the separation of its civilian nuclear facilities is guided by the following principles:

- Credible, feasible and implementable in a transparent manner;
- Consistent with the understandings of the 18 July Statement;
- Consistent with India's national security and R&D requirements as well as not prejudicial to the three-stage nuclear programme in India;
- Must be cost effective in its implementation; and
- Must be acceptable to Parliament and public opinion.

13. Based on these principles, India will:

- Include in the civilian list only those facilities offered for safeguards that, after separation, will no longer be engaged in activities of strategic significance.
- The overarching criterion would be a judgment whether subjecting a facility to IAEA safeguards would impact adversely on India's national security.
- However, a facility will be excluded from the civilian list if it is located in a larger hub of strategic significance, notwithstanding the fact that it may not be normally engaged in activities of strategic significance.
- A civilian facility would therefore, be one that India has determined not to be relevant to its strategic programme.

14. Taking the above into account, India, on the basis of reciprocal actions by the U.S., will adopt the following approach:

i) **Thermal Power Reactors**: India will identify and offer for safeguards 14 thermal power reactors between 2006 and 2014. This will include the 4 presently safeguarded reactors (TAPS 1&2, RAPS 1&2) and in addition KK 1&2 that are under construction. 8 other PHWRs, each of a capacity of 220 MWe, will also be offered.

S.No.	Facility	Year offered for safeguards
1.	TAPS 1	2006
2.	TAPS 2	2006
3.	RAPS 1	2006
4.	RAPS 2	2006
5.	KK 1	2006
6.	KK 2	2006
7.	RAPS 5	2007
8.	RAPS 6	2008
9.	RAPS 3	2010
10.	RAPS 4	2010
11.	KAPS 1	2012
12.	KAPS 2	2012
13.	NAPS 1	2014
14.	NAPS 2	2014

The above offer would, in effect, cover 14 out of the 22 thermal power reactors in operation or currently under construction to be placed under safeguards, and would raise the total installed Thermal Power capacity by MWs under safeguards from the present 19% to 65% by 2014.

ii) **Fast Breeder Reactors**: India is not in a position to accept safeguards on the Prototype Fast Breeder Reactor (PFBR) and the Fast Breeder Test Reactor (FBTR), both located at Kalpakkam. The Fast Breeder Programme is at the R&D stage and its technology will take time to mature and reach an advanced stage of development.

iii) **Future Reactors**: India has decided to place under safeguards all future civilian thermal power reactors and civilian breeder reactors, and the Government of India retains the sole right to determine such reactors as civilian.

iv) **Research Reactors**: India will permanently shut down the CIRUS reactor, in 2010. It will also be prepared to shift the fuel core of the APSARA reactor that was purchased from France outside BARC and make the fuel core available to be placed under safeguards in 2010.

v) **Upstream facilities**: The following upstream facilities would be identified and separated as civilian:

– List of those specific facilities in the Nuclear Fuel Complex, which will be offered for -safeguards by 2008 will be indicated separately.

- Uranium Oxide Plant (Block A)
- Ceramic Fuel Fabrication Plant (Palletizing) (Block A)
- Ceramic Fuel Fabrication Plant (Assembly) (Block A)
- Enriched Uranium Oxide Plant
- Enriched Fuel Fabrication Plant
- Gadolinia Facility

– The Heavy Water Production plants at Thal, Tuticorin and Hazira are proposed to be designated for civilian use between 2006-2009. We do not consider these plants as relevant for safeguards purposes.

vi) **Downstream facilities**: The following downstream facilities would be identified and separated as civilian:

- India is willing to accept safeguards in the 'campaign' mode after 2010 in respect of the Tarapur Power Reactor Fuel Reprocessing Plant.

- The Tarapur and Rajasthan 'Away From Reactors' spent fuel storage pools would be made available for safeguards with appropriate phasing between 2006-2009.

vii) **Research Facilities**: India will declare the following facilities as civilian:

(a) Tata Institute of Fundamental Research
(b) Variable Energy Cyclotron Centre
(c) Saha Institute of Nuclear Physics
(d) Institute for Plasma Research
(e) Institute of Mathematics Sciences
(f) Institute of Physics
(g) Tata Memorial Centre
(h) Board of Radiation and Isotope Technology
(i) Harish Chandra Research Institute

These facilities are safeguards-irrelevant. It is our expectation that they will play a prominent role in international cooperation.

15. Safeguards:

(a) The United States has conveyed its commitment to the reliable supply of fuel to India. Consistent with the July 18, 2005, Joint Statement, the United States has also reaffirmed its assurance to create the necessary conditions for India to have assured and full access to fuel for its reactors. As part of its implementation of the July 18, 2005, Joint Statement the United States is committed to seeking agreement from the U.S. Congress to amend its domestic laws and to work with friends and allies to adjust the practices of the Nuclear Suppliers Group to create the necessary conditions for India to obtain full access to the

international fuel market, including reliable, uninterrupted and continual access to fuel supplies from firms in several nations.

(b) To further guard against any disruption of fuel supplies, the United States is prepared to take the following additional steps:

i) The United States is willing to incorporate assurances regarding fuel supply in the bilateral U.S.-India agreement on peaceful uses of nuclear energy under Section 123 of the U.S. Atomic Energy Act, which would be submitted to the U.S. Congress.

ii) The United States will join India in seeking to negotiate with the IAEA an India-specific fuel supply agreement.

iii) The United States will support an Indian effort to develop a strategic reserve of nuclear fuel to guard against any disruption of supply over the lifetime of India's reactors.

iv) If despite these arrangements, a disruption of fuel supplies to India occurs, the United States and India would jointly convene a group of friendly supplier countries to include countries such as Russia, France and the United Kingdom to pursue such measures as would restore fuel supply to India.

(c) In light of the above understandings with the United States, an India-specific safeguards agreement will be negotiated between India and the IAEA providing for safeguards to guard against withdrawal of safeguarded nuclear material from civilian use at any time as well as providing for corrective measures that India may take to ensure uninterrupted operation of its civilian nuclear reactors in the event of disruption of foreign fuel supplies. Taking this into account, India will place its civilian nuclear facilities under India-specific safeguards in perpetuity and negotiate an appropriate safeguards agreement to this end with the IAEA.

16. This plan is in conformity with the commitments made to Parliament by the Government.

{Tabled in Parliament on May 11, 2006}

Agreement for Cooperation between the Government of the United States of America and the Government of India Concerning Peaceful Uses of Nuclear Energy*

[123 Agreement]

The Government of India and the Government of the United States of America, hereinafter referred to as the Parties,

RECOGNIZING the significance of civilian nuclear energy for meeting growing global energy demands in a cleaner and more efficient manner;

DESIRING to cooperate extensively in the full development and use of nuclear energy for peaceful purposes as a means of achieving energy security, on a stable, reliable and predictable basis;

WISHING to develop such cooperation on the basis of mutual respect for sovereignty, non-interference in each other's internal affairs, equality, mutual benefit, reciprocity and with due respect for each other's nuclear programs;

DESIRING to establish the necessary legal framework and basis for cooperation concerning peaceful uses of nuclear energy;

AFFIRMING that cooperation under this Agreement is between two States possessing advanced nuclear technology, both Parties having the same benefits and advantages, both committed to preventing WMD proliferation;

NOTING the understandings expressed in the India-U.S. Joint Statement of July 18, 2005 to enable full civil nuclear energy cooperation with India covering aspects of the associated nuclear fuel cycle;

AFFIRMING their support for the objectives of the International Atomic Energy Agency (IAEA) and its safeguards system, as applicable to India and the United States of America, and its importance in ensuring that international cooperation in development and use of nuclear energy for peaceful purposes is carried out under arrangements that will not contribute to the proliferation of nuclear weapons or other nuclear explosive devices;

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* Reproduction of the text as published at: www.foreignaffairs.house.gov/press_display.asp?id=555.

NOTING their respective commitments to safety and security of peaceful uses of nuclear energy, to adequate physical protection of nuclear material and effective national export controls;

MINDFUL that peaceful nuclear activities must be undertaken with a view to protecting the environment;

MINDFUL of their shared commitment to preventing the proliferation of weapons of mass destruction; and

DESIROUS of strengthening the strategic partnership between them;

Have agreed on the following:

Article 1 – Definitions

For the purposes of this Agreement:

(A) "By-product material" means any radioactive material (except special fissionable material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special fissionable material. By-product material shall not be subject to safeguards or any other form of verification under this Agreement, unless it has been decided otherwise by prior mutual agreement in writing between the two Parties.

(B) "Component" means a component part of equipment, or other item so designated by agreement of the Parties.

(C) "Conversion" means any of the normal operations in the nuclear fuel cycle, preceding fuel fabrication and excluding enrichment, by which uranium is transformed from one chemical form to another – for example, from uranium hexafluoride (UF6) to uranium dioxide (UO2) or from uranium oxide to metal.

(D) "Decommissioning" means the actions taken at the end of a facility's useful life to retire the facility from service in the manner that provides adequate protection for the health and safety of the decommissioning workers and the general public, and for the environment. These actions can range from closing down the facility and a minimal removal of nuclear material coupled with continuing maintenance and surveillance, to a complete removal of residual radioactivity in excess of levels acceptable for unrestricted use of the facility and its site.

(E) "Dual-Use Item" means a nuclear related item which has a technical use in both nuclear and non-nuclear applications.

(F) "Equipment" means any equipment in nuclear operation including reactor, reactor pressure vessel, reactor fuel charging and discharging equipment, reactor control rods, reactor pressure tubes, reactor primary coolant pumps, zirconium tubing, equipment for fuel fabrication and any other item so designated by the Parties.

(G) "High enriched uranium" means uranium enriched to twenty percent or greater in the isotope 235.

(H) "Information" means any information that is not in the public domain and is transferred in any form pursuant to this Agreement and so designated and documented in hard copy or digital form by mutual agreement by the Parties that it shall be subject to this Agreement, but will cease to be information whenever the Party transferring the information or any third party legitimately releases it into the public domain.

(I) "Low enriched uranium" means uranium enriched to less than twenty percent in the isotope 235.

(J) "Major critical component" means any part or group of parts essential to the operation of a sensitive nuclear facility or heavy water production facility.

(K) "Non-nuclear material" means heavy water, or any other material suitable for use in a reactor to slow down high velocity neutrons and increase the likelihood of further fission, as may be jointly designated by the appropriate authorities of the Parties.

(L) "Nuclear material" means (1) source material and (2) special fissionable material. "Source material" means uranium containing the mixture of isotopes occurring in nature; uranium depleted in the isotope 235; thorium; any of the foregoing in the form of metal, alloy, chemical compound, or concentrate; any other material containing one or more of the foregoing in such concentration as the Board of Governors of the IAEA shall from time to time determine; and such other materials as the Board of Governors of the IAEA may determine or as may be agreed by the appropriate authorities of both Parties. "Special fissionable material" means plutonium, uranium-233, uranium enriched in the isotope 233 or 235, any substance containing one or more of the foregoing, and such other substances as the Board of Governors of the IAEA may determine or as may be agreed by the appropriate authorities of both Parties. "Special fissionable material" does not include "source material". Any determination by the Board of Governors of the IAEA under Article XX of that Agency's Statute or otherwise that amends the list of materials considered to be "source material" or "special fissionable material" shall only have effect under this Agreement when both Parties to this Agreement have informed each other in writing that they accept such amendment.

(M) "Peaceful purposes" include the use of information, nuclear material, equipment or components in such fields as research, power generation, medicine, agriculture and industry, but do not include use in, research on, or development of any nuclear explosive device or any other military purpose. Provision of power for a military base drawn from any power network, production of radioisotopes to be used for medical purposes in military environment for diagnostics, therapy and sterility assurance, and other similar purposes as may be mutually agreed by the Parties shall not be regarded as military purpose.

(N) "Person" means any individual or any entity subject to the territorial jurisdiction of either Party but does not include the Parties.

(O) "Reactor" means any apparatus, other than a nuclear weapon or other nuclear explosive device, in which a self-sustaining fission chain reaction is maintained by utilizing uranium, plutonium, or thorium or any combination thereof.

(P) "Sensitive nuclear facility" means any facility designed or used primarily for uranium enrichment, reprocessing of nuclear fuel, or fabrication of nuclear fuel containing plutonium.

(Q) "Sensitive nuclear technology" means any information that is not in the public domain and that is important to the design, construction, fabrication, operation, or maintenance of any sensitive

nuclear facility, or other such information that may be so designated by agreement of the Parties.

Article 2 – Scope of cooperation

1. The Parties shall cooperate in the use of nuclear energy for peaceful purposes in accordance with the provisions of this Agreement. Each Party shall implement this Agreement in accordance with its respective applicable treaties, national laws, regulations, and license requirements concerning the use of nuclear energy for peaceful purposes.

2. The purpose of the Agreement being to enable full civil nuclear energy cooperation between the Parties, the Parties may pursue cooperation in all relevant areas to include, but not limited to, the following:

   a. Advanced nuclear energy research and development in such areas as may be agreed between the Parties;

   b. Nuclear safety matters of mutual interest and competence, as set out in Article 3;

   c. Facilitation of exchange of scientists for visits, meetings, symposia and collaborative research;

   d. Full civil nuclear cooperation activities covering nuclear reactors and aspects of the associated nuclear fuel cycle including technology transfer on an industrial or commercial scale between the Parties or authorized persons;

   e. Development of a strategic reserve of nuclear fuel to guard against any disruption of supply over the lifetime of India's reactors;

   f. Advanced research and development in nuclear sciences including but not limited to biological research, medicine, agriculture and industry, environment and climate change;

   g. Supply between the Parties, whether for use by or for the benefit of the Parties or third countries, of nuclear material;

   h. Alteration in form or content of nuclear material as provided for in Article 6;

   i. Supply between the Parties of equipment, whether for use by or for the benefit of the Parties or third countries;

   j. Controlled thermonuclear fusion including in multilateral projects; and

   k. Other areas of mutual interest as may be agreed by the Parties.

3. Transfer of nuclear material, non-nuclear material, equipment, components and information under this Agreement may be undertaken directly between the Parties or through authorized persons. Such transfers shall be subject to this Agreement and to such additional terms and conditions as may be agreed by the Parties. Nuclear material, non-nuclear material, equipment, components and information transferred from the territory of one Party to the territory of the other Party, whether directly or through a third country, will be regarded as having been

transferred pursuant to this Agreement only upon confirmation, by the appropriate authority of the recipient Party to the appropriate authority of the supplier Party that such items both will be subject to the Agreement and have been received by the recipient Party.

4. The Parties affirm that the purpose of this Agreement is to provide for peaceful nuclear cooperation and not to affect the unsafeguarded nuclear activities of either Party. Accordingly, nothing in this Agreement shall be interpreted as affecting the rights of the Parties to use for their own purposes nuclear material, non-nuclear material, equipment, components, information or technology produced, acquired or developed by them independent of any nuclear material, non-nuclear material, equipment, components, information or technology transferred to them pursuant to this Agreement. This Agreement shall be implemented in a manner so as not to hinder or otherwise interfere with any other activities involving the use of nuclear material, non-nuclear material, equipment, components, information or technology and military nuclear facilities produced, acquired or developed by them independent of this Agreement for their own purposes.

Article 3 – Transfer of information

1. Information concerning the use of nuclear energy for peaceful purposes may be transferred between the Parties. Transfers of information may be accomplished through reports, data banks and computer programs and any other means mutually agreed to by the Parties. Fields that may be covered include, but shall not be limited to, the following:

   a. Research, development, design, construction, operation, maintenance and use of reactors, reactor experiments, and decommissioning;

   b. The use of nuclear material in physical, chemical, radiological and biological research, medicine, agriculture and industry;

   c. Fuel cycle activities to meet future world-wide civil nuclear energy needs, including multilateral approaches to which they are parties for ensuring nuclear fuel supply and appropriate techniques for management of nuclear wastes;

   d. Advanced research and development in nuclear science and technology;

   e. Health, safety, and environmental considerations related to the foregoing;

   f. Assessments of the role nuclear power may play in national energy plans;

   g. Codes, regulations and standards for the nuclear industry;

   h. Research on controlled thermonuclear fusion including bilateral activities and contributions toward multilateral projects such as the International Thermonuclear Experimental Reactor (ITER); and

   i. Any other field mutually agreed to by the Parties.

2. Cooperation pursuant to this Article may include, but is not limited to, training, exchange of personnel, meetings, exchange of samples, materials and instruments for experimental purposes and a balanced participation in joint studies and projects.

3. This Agreement does not require the transfer of any information regarding matters outside the scope of this Agreement, or information that the Parties are not permitted under their respective treaties, national laws, or regulations to transfer.

4. Restricted Data, as defined by each Party, shall not be transferred under this Agreement.

Article 4 – Nuclear trade

1. The Parties shall facilitate nuclear trade between themselves in the mutual interests of their respective industry, utilities and consumers and also, where appropriate, trade between third countries and either Party of items obligated to the other Party. The Parties recognize that reliability of supplies is essential to ensure smooth and uninterrupted operation of nuclear facilities and that industry in both the Parties needs continuing reassurance that deliveries can be made on time in order to plan for the efficient operation of nuclear installations.

2. Authorizations, including export and import licenses as well as authorizations or consents to third parties, relating to trade, industrial operations or nuclear material movement should be consistent with the sound and efficient administration of this Agreement and should not be used to restrict trade. It is further agreed that if the relevant authority of the concerned Party considers that an application cannot be processed within a two month period it shall immediately, upon request, provide reasoned information to the submitting Party. In the event of a refusal to authorize an application or a delay exceeding four months from the date of the first application the Party of the submitting persons or undertakings may call for urgent consultations under Article 13 of this Agreement, which shall take place at the earliest opportunity and in any case not later than 30 days after such a request.

Article 5 – Transfer of nuclear material, non-nuclear material, equipment, components and related technology

1. Nuclear material, non-nuclear material, equipment and components may be transferred for applications consistent with this Agreement. Any special fissionable material transferred under this Agreement shall be low enriched uranium, except as provided in paragraph 5.

2. Sensitive nuclear technology, heavy water production technology, sensitive nuclear facilities, heavy water production facilities and major critical components of such facilities may be transferred under this Agreement pursuant to an amendment to this Agreement. Transfers of dual-use items that could be used in enrichment, reprocessing or heavy water production facilities will be subject to the Parties' respective applicable laws, regulations and license policies.

3. Natural or low enriched uranium may be transferred for use as fuel in reactor experiments and in reactors, for conversion or fabrication, or for such other purposes as may be agreed to by the Parties.

4. The quantity of nuclear material transferred under this Agreement shall be consistent with any of the following purposes: use in reactor experiments or the loading of reactors, the efficient and continuous conduct of such reactor experiments or operation of reactors for their lifetime, use as samples, standards, detectors, and targets, and the accomplishment of other purposes as may be agreed by the Parties.

5. Small quantities of special fissionable material may be transferred for use as samples, standards, detectors, and targets, and for such other purposes as the Parties may agree.

6.

(a) The United States has conveyed its commitment to the reliable supply of fuel to India. Consistent with the July 18, 2005, Joint Statement, the United States has also reaffirmed its assurance to create the necessary conditions for India to have assured and full access to fuel for its reactors. As part of its implementation of the July 18, 2005, Joint Statement the United States is committed to seeking agreement from the U.S. Congress to amend its domestic laws and to work with friends and allies to adjust the practices of the Nuclear Suppliers Group to create the necessary conditions for India to obtain full access to the international fuel market, including reliable, uninterrupted and continual access to fuel supplies from firms in several nations.

(b) To further guard against any disruption of fuel supplies, the United States is prepared to take the following additional steps:

i) The United States is willing to incorporate assurances regarding fuel supply in the bilateral U.S.-India agreement on peaceful uses of nuclear energy under Section 123 of the U.S. Atomic Energy Act, which would be submitted to the U.S. Congress.

ii) The United States will join India in seeking to negotiate with the IAEA an India-specific fuel supply agreement.

iii) The United States will support an Indian effort to develop a strategic reserve of nuclear fuel to guard against any disruption of supply over the lifetime of India's reactors.

iv) If despite these arrangements, a disruption of fuel supplies to India occurs, the United States and India would jointly convene a group of friendly supplier countries to include countries such as Russia, France and the United Kingdom to pursue such measures as would restore fuel supply to India.

(c) In light of the above understandings with the United States, an India-specific safeguards agreement will be negotiated between India and the IAEA providing for safeguards to guard against withdrawal of safeguarded nuclear material from civilian use at any time as well as providing for corrective measures that India may take to ensure uninterrupted operation of its civilian nuclear reactors in the event of disruption of foreign fuel supplies. Taking this into account, India will place its civilian nuclear facilities under India-specific safeguards in perpetuity and negotiate an appropriate safeguards agreement to this end with the IAEA.

Article 6 – Nuclear fuel cycle activities

In keeping with their commitment to full civil nuclear cooperation, both Parties, as they do with other states with advanced nuclear technology, may carry out the following nuclear fuel cycle activities:

i) Within the territorial jurisdiction of either Party, enrichment up to twenty percent in the isotope 235 of uranium transferred pursuant to this Agreement, as well as of uranium used in or produced through the use of equipment so transferred, may be carried out.

ii) Irradiation within the territorial jurisdiction of either Party of plutonium, uranium-233, high enriched uranium and irradiated nuclear material transferred pursuant to this Agreement or used in or produced through the use of non-nuclear material, nuclear material or equipment so transferred may be carried out.

iii) With a view to implementing full civil nuclear cooperation as envisioned in the Joint Statement of the Parties of July 18, 2005, the Parties grant each other consent to reprocess or otherwise alter in form or content nuclear material transferred pursuant to this Agreement and nuclear material and by-product material used in or produced through the use of nuclear material, non-nuclear material, or equipment so transferred. To bring these rights into effect, India will establish a new national reprocessing facility dedicated to reprocessing safeguarded nuclear material under IAEA safeguards and the Parties will agree on arrangements and procedures under which such reprocessing or other alteration in form or content will take place in this new facility. Consultations on arrangements and procedures will begin within six months of a request by either Party and will be concluded within one year. The Parties agree on the application of IAEA safeguards to all facilities concerned with the above activities. These arrangements and procedures shall include provisions with respect to physical protection standards set out in Article 8, storage standards set out in Article 7, and environmental protections set forth in Article 11 of this Agreement, and such other provisions as may be agreed by the Parties. Any special fissionable material that may be separated may only be utilized in national facilities under IAEA safeguards.

iv) Post-irradiation examination involving chemical dissolution or separation of irradiated nuclear material transferred pursuant to this Agreement or irradiated nuclear material used in or produced through the use of non-nuclear material, nuclear material or equipment so transferred may be carried out.

Article 7 – Storage and retransfers

1. Plutonium and uranium 233 (except as either may be contained in irradiated fuel elements), and high enriched uranium, transferred pursuant to this Agreement or used in or produced through the use of material or equipment so transferred, may be stored in facilities that are at all times subject, as a minimum, to the levels of physical protection that are set out in IAEA document INFCIRC 225/REV 4 as it may be revised and accepted by the Parties. Each Party shall record such facilities on a list, made available to the other Party. A Party's list shall be held confidential if that Party so requests. Either Party may make changes to its list by notifying the other Party in writing and receiving a written acknowledgement. Such acknowledgement shall be given no later than thirty days after the receipt of the notification and shall be limited to a statement that the notification has been received. If there are grounds to believe that the provisions of this sub-Article are not being fully complied with, immediate consultations may be called for. Following upon such consultations, each Party shall ensure by means of such consultations that necessary remedial measures are taken immediately. Such measures shall be sufficient to restore the levels of physical protection referred to above at the facility in question. However, if the Party on whose territory the nuclear material in question is stored determines that such measures are not feasible, it will shift the nuclear material to another appropriate, listed facility it identifies.

2. Nuclear material, non-nuclear material, equipment, components, and information transferred pursuant to this Agreement and any special fissionable material produced through the use of nuclear material, non-nuclear material or equipment so transferred shall not be transferred or re-

transferred to unauthorized persons or, unless the Parties agree, beyond the recipient Party's territorial jurisdiction.

Article 8 – Physical protection

1. Adequate physical protection shall be maintained with respect to nuclear material and equipment transferred pursuant to this Agreement and nuclear material used in or produced through the use of nuclear material, non-nuclear material or equipment so transferred.

2. To fulfill the requirement in paragraph 1, each Party shall apply measures in accordance with (i) levels of physical protection at least equivalent to the recommendations published in IAEA document INFCIRC/225/Rev.4 entitled "The Physical Protection of Nuclear Material and Nuclear Facilities", and in any subsequent revisions of that document agreed to by the Parties, and (ii) the provisions of the 1980 Convention on the Physical Protection of Nuclear Material and any amendments to the Convention that enter into force for both Parties.

3. The Parties will keep each other informed through diplomatic channels of those agencies or authorities having responsibility for ensuring that levels of physical protection for nuclear material in their territory or under their jurisdiction or control are adequately met and having responsibility for coordinating response and recovery operations in the event of unauthorized use or handling of material subject to this Article. The Parties will also keep each other informed through diplomatic channels of the designated points of contact within their national authorities to cooperate on matters of out-of-country transportation and other matters of mutual concern.

4. The provisions of this Article shall be implemented in such a manner as to avoid undue interference in the Parties' peaceful nuclear activities and so as to be consistent with prudent management practices required for the safe and economic conduct of their peaceful nuclear programs.

Article 9 – Peaceful use

Nuclear material, equipment and components transferred pursuant to this Agreement and nuclear material and by-product material used in or produced through the use of any nuclear material, equipment, and components so transferred shall not be used by the recipient Party for any nuclear explosive device, for research on or development of any nuclear explosive device or for any military purpose.

Article 10 – IAEA safeguards

1. Safeguards will be maintained with respect to all nuclear materials and equipment transferred pursuant to this Agreement, and with respect to all special fissionable material used in or produced through the use of such nuclear materials and equipment, so long as the material or equipment remains under the jurisdiction or control of the cooperating Party.

2. Taking into account Article 5.6 of this Agreement, India agrees that nuclear material and equipment transferred to India by the United States of America pursuant to this Agreement and any nuclear material used in or produced through the use of nuclear material, non-nuclear

material, equipment or components so transferred shall be subject to safeguards in perpetuity in accordance with the India-specific Safeguards Agreement between India and the IAEA [***identifying data***] and an Additional Protocol, when in force.

3. Nuclear material and equipment transferred to the United States of America pursuant to this Agreement and any nuclear material used in or produced through the use of any nuclear material, non-nuclear material, equipment, or components so transferred shall be subject to the Agreement between the United States of America and the IAEA for the application of safeguards in the United States of America, done at Vienna November 18, 1977, which entered into force on December 9, 1980, and an Additional Protocol, when in force.

4. If the IAEA decides that the application of IAEA safeguards is no longer possible, the supplier and recipient should consult and agree on appropriate verification measures.

5. Each Party shall take such measures as are necessary to maintain and facilitate the application of IAEA safeguards in its respective territory provided for under this Article.

6. Each Party shall establish and maintain a system of accounting for and control of nuclear material transferred pursuant to this Agreement and nuclear material used in or produced through the use of any material, equipment, or components so transferred. The procedures applicable to India shall be those set forth in the India-specific Safeguards Agreement referred to in Paragraph 2 of this Article.

7. Upon the request of either Party, the other Party shall report or permit the IAEA to report to the requesting Party on the status of all inventories of material subject to this Agreement.

8. The provisions of this Article shall be implemented in such a manner as to avoid hampering, delay, or undue interference in the Parties' peaceful nuclear activities and so as to be consistent with prudent management practices required for the safe and economic conduct of their peaceful nuclear programs.

Article 11 – Environmental protection

The Parties shall cooperate in following the best practices for minimizing the impact on the environment from any radioactive, chemical or thermal contamination arising from peaceful nuclear activities under this Agreement and in related matters of health and safety.

Article 12 – Implementation of the agreement

1. This Agreement shall be implemented in a manner designed:

   a) to avoid hampering or delaying the nuclear activities in the territory of either Party;

   b) to avoid interference in such activities;

   c) to be consistent with prudent management practices required for the safe conduct of such activities; and

d) to take full account of the long term requirements of the nuclear energy programs of the Parties.

2. The provisions of this Agreement shall not be used to:

a) secure unfair commercial or industrial advantages or to restrict trade to the disadvantage of persons and undertakings of either Party or hamper their commercial or industrial interests, whether international or domestic;

b) interfere with the nuclear policy or programs for the promotion of the peaceful uses of nuclear energy including research and development; or

c) impede the free movement of nuclear material, non nuclear material and equipment supplied under this Agreement within the territory of the Parties.

3. When execution of an agreement or contract pursuant to this Agreement between Indian and United States organizations requires exchanges of experts, the Parties shall facilitate entry of the experts to their territories and their stay therein consistent with national laws, regulations and practices. When other cooperation pursuant to this Agreement requires visits of experts, the Parties shall facilitate entry of the experts to their territory and their stay therein consistent with national laws, regulations and practices.

Article 13 – Consultations

1. The Parties undertake to consult at the request of either Party regarding the implementation of this Agreement and the development of further cooperation in the field of peaceful uses of nuclear energy on a stable, reliable and predictable basis. The Parties recognize that such consultations are between two States with advanced nuclear technology, which have agreed to assume the same responsibilities and practices and acquire the same benefits and advantages as other leading countries with advanced nuclear technology.

2. Each Party shall endeavor to avoid taking any action that adversely affects cooperation envisaged under Article 2 of this Agreement. If either Party at any time following the entry into force of this Agreement does not comply with the provisions of this Agreement, the Parties shall promptly hold consultations with a view to resolving the matter in a way that protects the legitimate interests of both Parties, it being understood that rights of either Party under Article 16.2 remain unaffected.

3. Consultations under this Article may be carried out by a Joint Committee specifically established for this purpose. A Joint Technical Working Group reporting to the Joint Committee will be set up to ensure the fulfillment of the requirements of the Administrative Arrangements referred to in Article 17.

Article 14 – Termination and cessation of cooperation

1. Either Party shall have the right to terminate this Agreement prior to its expiration on one year's written notice to the other Party. A Party giving notice of termination shall provide the reasons for seeking such termination. The Agreement shall terminate one year from the date of the

written notice, unless the notice has been withdrawn by the providing Party in writing prior to the date of termination.

2. Before this Agreement is terminated pursuant to paragraph 1 of this Article, the Parties shall consider the relevant circumstances and promptly hold consultations, as provided in Article 13, to address the reasons cited by the Party seeking termination. The Party seeking termination has the right to cease further cooperation under this Agreement if it determines that a mutually acceptable resolution of outstanding issues has not been possible or cannot be achieved through consultations. The Parties agree to consider carefully the circumstances that may lead to termination or cessation of cooperation. They further agree to take into account whether the circumstances that may lead to termination or cessation resulted from a Party's serious concern about a changed security environment or as a response to similar actions by other States which could impact national security.

3. If a Party seeking termination cites a violation of this Agreement as the reason for notice for seeking termination, the Parties shall consider whether the action was caused inadvertently or otherwise and whether the violation could be considered as material. No violation may be considered as being material unless corresponding to the definition of material violation or breach in the Vienna Convention on the Law of Treaties. If a Party seeking termination cites a violation of an IAEA safeguards agreement as the reason for notice for seeking termination, a crucial factor will be whether the IAEA Board of Governors has made a finding of non-compliance.

4. Following the cessation of cooperation under this Agreement, either Party shall have the right to require the return by the other Party of any nuclear material, equipment, non-nuclear material or components transferred under this Agreement and any special fissionable material produced through their use. A notice by a Party that is invoking the right of return shall be delivered to the other Party on or before the date of termination of this Agreement. The notice shall contain a statement of the items subject to this Agreement as to which the Party is requesting return. Except as provided in provisions of Article 16.3, all other legal obligations pertaining to this Agreement shall cease to apply with respect to the nuclear items remaining on the territory of the Party concerned upon termination of this Agreement.

5. The two Parties recognize that exercising the right of return would have profound implications for their relations. If either Party seeks to exercise its right pursuant to paragraph 4 of this Article, it shall, prior to the removal from the territory or from the control of the other Party of any nuclear items mentioned in paragraph 4, undertake consultations with the other Party. Such consultations shall give special consideration to the importance of uninterrupted operation of nuclear reactors of the Party concerned with respect to the availability of nuclear energy for peaceful purposes as a means of achieving energy security. Both Parties shall take into account the potential negative consequences of such termination on the on-going contracts and projects initiated under this Agreement of significance for the respective nuclear programs of either Party.

6. If either Party exercises its right of return pursuant to paragraph 4 of this Article, it shall, prior to the removal from the territory or from the control of the other Party, compensate promptly that Party for the fair market value thereof and for the costs incurred as a consequence of such removal. If the return of nuclear items is required, the Parties shall agree on methods and arrangements for the return of the items, the relevant quantity of the items to be returned, and the amount of compensation that would have to be paid by the Party exercising the right to the other Party.

7. Prior to return of nuclear items, the Parties shall satisfy themselves that full safety, radiological and physical protection measures have been ensured in accordance with their existing national regulations and that the transfers pose no unreasonable risk to either Party, countries through which the nuclear items may transit and to the global environment and are in accordance with existing international regulations.

8. The Party seeking the return of nuclear items shall ensure that the timing, methods and arrangements for return of nuclear items are in accordance with paragraphs 5, 6 and 7. Accordingly, the consultations between the Parties shall address mutual commitments as contained in Article 5.6. It is not the purpose of the provisions of this Article regarding cessation of cooperation and right of return to derogate from the rights of the Parties under Article 5.6.

9. The arrangements and procedures concluded pursuant to Article 6(iii) shall be subject to suspension by either Party in exceptional circumstances, as defined by the Parties, after consultations have been held between the Parties aimed at reaching mutually acceptable resolution of outstanding issues, while taking into account the effects of such suspension on other aspects of cooperation under this Agreement.

Article 15 – Settlement of disputes

Any dispute concerning the interpretation or implementation of the provisions of this Agreement shall be promptly negotiated by the Parties with a view to resolving that dispute.

Article 16 – Entry into force and duration

1. This Agreement shall enter into force on the date on which the Parties exchange diplomatic notes informing each other that they have completed all applicable requirements for its entry into force.

2. This Agreement shall remain in force for a period of 40 years. It shall continue in force thereafter for additional periods of 10 years each. Each Party may, by giving 6 months written notice to the other Party, terminate this Agreement at the end of the initial 40 year period or at the end of any subsequent 10 year period.

3. Notwithstanding the termination or expiration of this Agreement or withdrawal of a Party from this Agreement, Articles 5.6(c), 6, 7, 8, 9, 10 and 15 shall continue in effect so long as any nuclear material, non-nuclear material, by-product material, equipment or components subject to these articles remains in the territory of the Party concerned or under its jurisdiction or control anywhere, or until such time as the Parties agree that such nuclear material is no longer usable for any nuclear activity relevant from the point of view of safeguards.

4. This Agreement shall be implemented in good faith and in accordance with the principles of international law.

5. The Parties may consult, at the request of either Party, on possible amendments to this Agreement. This Agreement may be amended if the Parties so agree. Any amendment shall enter into force on the date on which the Parties exchange diplomatic notes informing each other that their respective internal legal procedures necessary for the entry into force have been completed.

Article 17 – Administrative arrangement

1. The appropriate authorities of the Parties shall establish an Administrative Arrangement in order to provide for the effective implementation of the provisions of this Agreement.

2. The principles of fungibility and equivalence shall apply to nuclear material and non-nuclear material subject to this Agreement. Detailed provisions for applying these principles shall be set forth in the Administrative Arrangement.

3. The Administrative Arrangement established pursuant to this Article may be amended by agreement of the appropriate authorities of the Parties.

IN WITNESS WHEREOF the undersigned, being duly authorized, have signed this Agreement.

DONE at , this day of , 200 , in duplicate.

FOR THE GOVERNMENT OF THE UNITED STATES OF AMERICA:

FOR THE GOVERNMENT OF INDIA:

Agreed Minute

During the negotiation of the Agreement for Cooperation Between the Government of the United States of America and the Government of India Concerning Peaceful Uses of Nuclear Energy ("the Agreement") signed today, the following understandings, which shall be an integral part of the Agreement, were reached.

Proportionality

For the purposes of implementing the rights specified in Articles 6 and 7 of the Agreement with respect to special fissionable material and by-product material produced through the use of nuclear material and non-nuclear material, respectively, transferred pursuant to the Agreement and not used in or produced through the use of equipment transferred pursuant to the Agreement, such rights shall in practice be applied to that proportion of special fissionable material and by-product material produced that represents the ratio of transferred nuclear material and non-nuclear material, respectively, used in the production of the special fissionable material and by-product material to the total amount of nuclear material and non-nuclear material so used, and similarly for subsequent generations.

By-product material

The Parties agree that reporting and exchanges of information on by-product material subject to the Agreement will be limited to the following:

(1) Both Parties would comply with the provisions as contained in the IAEA document GOV/1999/19/Rev.2, with regard to by-product material subject to the Agreement.

(2) With regard to tritium subject to the Agreement, the Parties will exchange annually information pertaining to its disposition for peaceful purposes consistent with Article 9 of this Agreement.

FOR THE GOVERNMENT OF THE UNITED STATES OF AMERICA:

FOR THE GOVERNMENT OF INDIA:

7 July 2008

Agreement between the Government of India and the International Atomic Energy Agency for the Application of Safeguards to Civilian Nuclear Facilities*

RECOGNIZING the significance India attaches to civilian nuclear energy as an efficient, clean and sustainable energy source for meeting global energy demand, in particular for meeting India's growing energy needs;

WHEREAS India is committed to the full development of its national three-stage nuclear programme to meet the twin challenges of energy security and protection of the environment;

WHEREAS India has a sovereign and inalienable right to carry out nuclear research and development activities for the welfare of its people and other peaceful purposes;

WHEREAS India, a State with advanced nuclear technology, wishes to expand civil nuclear cooperation for its national development;

WHEREAS India is desirous of further expanding cooperation with the International Atomic Energy Agency (hereinafter referred to as "the Agency") and its Member States with the objective of the full development and use of nuclear energy for peaceful purposes, on a stable, reliable and predictable basis;

WHEREAS India supports the role of the Agency in the promotion of the safe and peaceful uses of nuclear energy as set forth in the Statute of the Agency (hereinafter referred to as the "Statute");

WHEREAS India and the Agency have long standing cooperation in various aspects of the Agency's activities;

RECOGNIZING that such cooperation between India and the Agency must be carried out with full respect for the objectives of the Statute and with due observance of the sovereign rights of India;

WHEREAS the Statute authorizes the Agency to apply safeguards, at the request of the parties, to any bilateral or multilateral arrangement, or at the request of a State to any of the State's activities in the field of atomic energy and, in this context:

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* Reproduction of the text as available at www.hcfa.house.gov/110/press091108g.pdf and at www.pmindia.nic.in/IaeaIndiaSGADrft.pdf.

Noting the relevance for this Agreement of the understandings between India and the United States of America expressed in the India-U.S. Joint Statement of 18 July 2005, in which India, *inter alia*, has stated its willingness:

- to identify and separate its civilian and military nuclear facilities and programmes in a phased manner;

- to file with the Agency a declaration regarding its civilian nuclear facilities (hereinafter referred to as "the Declaration");

- to take a decision to place voluntarily its civilian nuclear facilities under Agency safeguards;

Noting also for the purposes of this Agreement that:

- India will place its civilian nuclear facilities under Agency safeguards so as to facilitate full civil nuclear cooperation between India and Member States of the Agency and to provide assurance against withdrawal of safeguarded nuclear material from civilian use at any time;

- An essential basis of India's concurrence to accept Agency safeguards under an India-specific safeguards agreement (hereinafter referred to as "this Agreement") is the conclusion of international cooperation arrangements creating the necessary conditions for India to obtain access to the international fuel market, including reliable, uninterrupted and continuous access to fuel supplies from companies in several nations, as well as support for an Indian effort to develop a strategic reserve of nuclear fuel to guard against any disruption of supply over the lifetime of India's reactors; and

- India may take corrective measures to ensure uninterrupted operation of its civilian nuclear reactors in the event of disruption of foreign fuel supplies;

WHEREAS India is desirous of expanding civil nuclear cooperation with other Member States of the Agency;

WHEREAS the conclusion of this Agreement is intended to facilitate the broadest possible cooperation between India and Member States of the Agency in the peaceful uses of nuclear energy and ensure international participation in the further development of India's civilian nuclear programme on a sustained and long-term basis;

RECALLING that the Agency in accordance with its Statute and safeguards system must take into account, in the implementation of safeguards in India, the need to avoid hampering the peaceful uses of nuclear energy, economic and technological development or international cooperation in the field of peaceful uses of nuclear energy; respect health, safety and physical protection and related security provisions in force in India; and take every precaution to protect commercial, technological and industrial secrets as well as other confidential information coming to its knowledge;

WHEREAS the frequency and intensity of activities described in this Agreement shall be kept to the minimum consistent with the objective of effective and efficient Agency safeguards;

WHEREAS India has requested the Agency to apply safeguards with respect to items subject to this Agreement;

WHEREAS the Board of Governors of the Agency (hereinafter referred to as the "Board") acceded to that request on ……;

NOW THEREFORE, taking into account the above, India and the Agency have agreed as follows:

I. GENERAL CONSIDERATIONS

A. BASIC UNDERTAKINGS

1. India undertakes that none of the items subject to this Agreement, as defined in paragraph 11, shall be used for the manufacture of any nuclear weapon or to further any other military purpose and that such items shall be used exclusively for peaceful purposes and shall not be used for the manufacture of any nuclear explosive device.

2. The Agency undertakes to apply safeguards, in accordance with the terms of this Agreement, to the items subject to this Agreement, as defined in paragraph 11, so as to ensure, as far as it is able, that no such item is used for the manufacture of any nuclear weapon or to further any other military purpose and that such items are used exclusively for peaceful purposes and not for the manufacture of any nuclear explosive device.

B. GENERAL PRINCIPLES

3. The purpose of safeguards under this Agreement is to guard against withdrawal of safeguarded nuclear material from civilian use at any time.

4. The application of safeguards under this Agreement is intended to facilitate implementation of relevant bilateral or multilateral arrangements to which India is a party, which are essential to the accomplishment of the objective of this Agreement.

5. Bearing in mind Article II of the Statute, the Agency shall implement safeguards in a manner designed to avoid hampering India's economic or technological development, and not to hinder or otherwise interfere with any activities involving the use by India of nuclear material, non-nuclear material, equipment, components, information or technology produced, acquired or developed by India independent of this Agreement for its own purposes.

6. The safeguards procedures set forth in this document shall be implemented in a manner designed to be consistent with prudent management practices required for the economic and safe conduct of nuclear activities.

7. In implementing safeguards, the Agency shall take every precaution to protect commercial and industrial secrets. No member of the Agency's staff shall disclose, except to the Director General and to such other members of the staff as the Director General may authorize to have such information by reason of their official duties in connection with safeguards, any commercial or industrial secret or any other confidential information coming to his knowledge by reason of the implementation of safeguards by the Agency.

8. The Agency shall not publish or communicate to any State, organization or person any information obtained by it in connection with the implementation of safeguards in India, except that:

(a) Specific information relating to such implementation in India may be given to the Board and to such Agency staff members as require such knowledge by reason of their official duties in connection with safeguards, but only to the extent necessary for the Agency to fulfil its safeguards responsibilities;

(b) Summarized lists of items being safeguarded by the Agency may be published upon decision of the Board; and

(c) Additional information may be published upon decision of the Board and if all States directly concerned agree.

9. In the light of Article XII.A.5 of the Statute, safeguards shall continue with respect to produced special fissionable material and to any materials substituted therefor.

10. Nothing in this Agreement shall affect other rights and obligations of India under international law.

II. CIRCUMSTANCES REQUIRING SAFEGUARDS

A. ITEMS SUBJECT TO THIS AGREEMENT

11. The items subject to this Agreement shall be:

(a) Any facility listed in the Annex to this Agreement, as notified by India pursuant to paragraph 14(a) of this Agreement;

(b) Any nuclear material, non-nuclear material, equipment and components supplied to India which are required to be safeguarded pursuant to a bilateral or multilateral arrangement to which India is a party;

(c) Any nuclear material, including subsequent generations of special fissionable material, produced, processed or used in or by the use of a facility listed in the Annex or in or by the use of any nuclear material, non-nuclear material, equipment and components referred to in paragraph 11(b);

(d) Any nuclear material substituted in accordance with paragraph 27 or 30(d) of this Agreement for nuclear material referred to in paragraph 11(b) or 11(c) of this Agreement;

(e) Any heavy water substituted in accordance with paragraph 32 of this Agreement for heavy water subject to this Agreement;

(f) Any facility other than a facility identified in paragraph 11(a) above, or any other location in India, while producing, processing, using, fabricating or storing any nuclear material, non-nuclear material, equipment or components referred to in paragraph 11(b), (c), (d) or (e) of this Agreement, as notified by India pursuant to paragraph 14(b) of this Agreement.

12. The scope of this Agreement is limited to the items subject to this Agreement as defined in paragraph 11 above.

Declaration

13. Upon entry into force of this Agreement, and a determination by India that all conditions conducive to the accomplishment of the objective of this Agreement are in place, India shall file with the Agency a Declaration, based on its sovereign decision to place voluntarily its civilian nuclear facilities under Agency safeguards in a phased manner.

Notifications

14.

(a) India, on the basis of its sole determination, shall notify the Agency in writing of its decision to offer for Agency safeguards a facility identified by India in the Declaration referred to in paragraph 13, or any other facility to be determined by India. Any facility so notified by India to the Agency will be included in the Annex, and become subject to this Agreement, as of the date of receipt by the Agency of such written notification from India.

(b) Should India, on the basis of its sole determination, decide to import or transfer any nuclear material, non-nuclear material, equipment or components subject to this Agreement to any facility or other location in India provided for in paragraph 11(f) of this Agreement, it shall so notify the Agency. Any such facility or location so notified by India pursuant to this sub-paragraph shall become subject to this Agreement as of the date of receipt by the Agency of such written notification from India.

15. India shall notify the Agency of the receipt of any nuclear material, non-nuclear material, equipment and components referred to in paragraph 11(b) of this Agreement within four weeks of the arrival in India of such nuclear material, non-nuclear material, equipment and components.

Provision of Information to the Agency

16. In the event that India's notification pursuant to paragraph 14(a) of this Agreement relates to a facility subject to Agency safeguards under another Safeguards Agreement or Agreements in India at the time of entry into force of this Agreement, India shall provide the Agency, along with the relevant notification, such information as is required pursuant to the other Safeguards Agreement or Agreements as relates to any nuclear material, non-nuclear material, equipment and components subject to safeguards thereunder.

17. With respect to any other facility listed in the Annex pursuant to paragraph 14(a) of this Agreement, India shall provide the Agency, within four weeks of the relevant notification, with:

(a) a list of all nuclear material at each such facility; and

(b) where relevant, and if required pursuant to a bilateral or multilateral arrangement to which India is party, information relating to:

(i) Any nuclear material, non-nuclear material, equipment and components supplied to India for production, processing, storage or use in such facility;

(ii) Any nuclear material, including subsequent generations of special fissionable material, produced, processed or used in or by the use of such facility or in or by the use of any nuclear material, non-nuclear material, equipment and components supplied to India for production, processing or use in such facility.

18. Each notification pursuant to paragraph 15 of the Agreement shall include all information relevant to the nuclear material, non-nuclear material, equipment and components so notified, including the facility or location where the nuclear material, non-nuclear material, equipment and components so notified will be received.

19. The information provided by India pursuant to paragraphs 16, 17 and 18 of this Agreement shall specify, inter alia, to the extent relevant, the nuclear and chemical composition, physical form and quantity of the nuclear material; the date of shipment; the date of receipt; the identity of the consigner and the consignee; and any other relevant information, such as the type and capacity of any facility (or parts thereof), components or equipment; and the type and quantity of non-nuclear material. In the case of a facility or other location subject to this Agreement, the information to be provided shall include the type and capacity of that facility or location, and any other relevant information.

20. India shall thereafter notify the Agency by means of reports, in accordance with this Agreement, of any nuclear material, non-nuclear material, equipment and components referred to in paragraph 11(b), (c), (d) or (e) of this Agreement. The Agency may verify the calculations of the amounts and/or quantities of such nuclear material, non-nuclear material, equipment and components, and appropriate adjustments shall be made by agreement between India and the Agency.

21. The Agency shall maintain an inventory of items subject to this Agreement. The Agency shall send a copy of the inventory it maintains with respect to such information to India every twelve months and also at any other times specified by India in a request communicated to the Agency at least two weeks in advance.

B. SAFEGUARDS UNDER OTHER AGREEMENTS

22. The application of Agency safeguards under other Safeguards Agreements concluded by India with the Agency and in force at the time of entry into force of this Agreement may, subject to agreement by the Parties to such other Safeguards Agreements and following notification by India of the relevant facilities pursuant to paragraph 14(a), be suspended while this Agreement is in force. The application of safeguards under this Agreement to nuclear material, non-nuclear material, equipment or components subject to safeguards under such other Agreements shall commence as of the date of receipt by the Agency of India's notification. India's undertaking not to use items subject thereto in such a way as to further any military purpose, and its undertaking that such items shall be used exclusively for peaceful purposes and shall not be used for the manufacture of any nuclear explosive device, shall continue to apply.

C. EXEMPTIONS FROM SAFEGUARDS

General Exemptions

23. Nuclear material that would otherwise be subject to safeguards shall be exempted from safeguards at the request of India, provided that the material so exempted in India may not at any time exceed:

(a) 1 kilogram in total of special fissionable material, which may consist of one or more of the following:

(i) Plutonium;

(ii) Uranium with an enrichment of 0.2 (20 %) and above, taken account of by multiplying its weight by its enrichment;

(iii) Uranium with an enrichment below 0.2 (20 %) and above that of natural uranium, taken account of by multiplying its weight by five times the square of its enrichment;

(b) 10 metric tons in total of natural uranium and depleted uranium with enrichment above 0.005 (0.5 %);

(c) 20 metric tons of depleted uranium with an enrichment of 0.005 (0.5 %) or below; and

(d) 20 metric tons of thorium.

Exemptions Related to Reactors

24. Produced or used nuclear material that would otherwise be subject to safeguards because it is being or has been produced, processed or used in a reactor which has been supplied wholly or substantially under a project agreement, submitted to safeguards under a safeguards agreement by the parties to a bilateral or multilateral arrangement or unilaterally submitted to safeguards under a safeguards agreement; or because it is being or has been produced in or by the use of safeguarded nuclear material, shall be exempted from safeguards if:

(a) It is plutonium produced in the fuel of a reactor whose rate of production does not exceed 100 grams of plutonium per year; or

(b) It is produced in a reactor determined by the Agency to have a maximum calculated power for continuous operation of less than 3 thermal megawatts, or is used in such a reactor and would not be subject to safeguards except for such use, provided that the total power of the reactors with respect to which these exemptions apply in any State may not exceed 6 thermal megawatts.

25. Produced special fissionable material that would otherwise be subject to safeguards only because it has been produced in or by the use of safeguarded nuclear material shall in part be exempted from safeguards if it is produced in a reactor in which the ratio of fissionable isotopes within safeguarded nuclear material to all fissionable isotopes is less than 0.3 (calculated each time any change is made in the loading of the reactor and assumed to be maintained until the next such change). Such fraction of the produced material as corresponds to the calculated ratio shall be subject to safeguards.

D. SUSPENSION OF SAFEGUARDS

26. Safeguards with respect to nuclear material may be suspended while the material is transferred, under an arrangement or agreement approved by the Agency, for the purpose of processing, reprocessing, testing, research or development, within India or to any other Member State or to an international organization, provided that the quantities of nuclear material with respect to which safeguards are thus suspended in India may not at any time exceed:

(a) 1 effective kilogram of special fissionable material;

(b) 10 metric tons in total of natural uranium and depleted uranium with an enrichment 0.005 (0.5 %);

(c) 20 metric tons of depleted uranium with an enrichment of 0.005 (0.5 %) or below; and

(d) 20 metric tons of thorium.

27. Safeguards with respect to nuclear material in irradiated fuel which is transferred for the purpose of reprocessing may also be suspended if the State or States concerned have, with the agreement of the Agency, placed under safeguards substitute nuclear material in accordance with paragraph 30(d) of this Agreement for the period of suspension. In addition, safeguards with respect to plutonium contained in irradiated fuel which is transferred for the purpose of reprocessing may be suspended for a period not to exceed six months if the State or States concerned have, with the agreement of the Agency, placed under safeguards a quantity of uranium whose enrichment in the isotope uranium-235 is not less than 0.9 (90%) and the uranium-235 content of which is equal in weight to such plutonium. Upon expiration of the said six months or the completion of reprocessing, whichever is earlier, safeguards shall, with the agreement of the Agency, be applied to such plutonium and shall cease to apply to the uranium substituted therefor.

28. Under conditions specified in the Subsidiary Arrangements, the Agency shall suspend safeguards with respect to any parts of the facilities listed in the Annex which are removed for maintenance or repair.

E. TERMINATION OF SAFEGUARDS

29. The termination of safeguards on items subject to this Agreement shall be implemented taking into account the provisions of GOV/1621 (20 August 1973).

30. Nuclear material shall no longer be subject to safeguards under this Agreement after:

(a) It has been returned to the State that originally supplied it (whether directly or through the Agency), if it was subject to safeguards only by reason of such supply and if:

(i) It was not improved while under safeguards; or

(ii) Any special fissionable material that was produced in it under safeguards has been separated out, or safeguards with respect to such produced material have been terminated; or

(b) The Agency has determined that:

(i) It was subject to safeguards only by reason of its use in a principal nuclear facility which has been supplied wholly or substantially under a project agreement, submitted to safeguards under a safeguards agreement by the parties to a bilateral or multilateral arrangement or unilaterally submitted to safeguards under a safeguards agreement;

(ii) It has been removed from such a facility; and

(iii) Any special fissionable material that was produced in it under safeguards has been separated out, or safeguards with respect to such produced material have been terminated; or

(c) The Agency has determined that it has been consumed, or has been diluted in such a way that it is no longer usable for any nuclear activity relevant from the point of view of safeguards, or has become practicably irrecoverable; or

(d) India has, with the agreement of the Agency, placed under safeguards, as a substitute, such amount of the same element, not otherwise subject to safeguards, as the Agency has determined contains fissionable isotopes:

(i) Whose weight (with due allowance for processing losses) is equal to or greater than the weight of the fissionable isotopes of the material with respect to which safeguards are to terminate; and

(ii) Whose ratio by weight to the total substituted element is similar to or greater than the ratio by weight of the fissionable isotopes of the material with respect to which safeguards are to terminate to the total weight of such material;

provided that the Agency may agree to the substitution of plutonium for uranium-235 contained in uranium whose enrichment is not greater than 0.05 (5.0 %); or

(e) It has been transferred out of India under paragraph 33(d) of this Agreement, provided that such material shall again be subject to safeguards if it is returned to India; or

(f) The terms of this Agreement, pursuant to which it was subject to safeguards under this Agreement, no longer apply, by expiration of this Agreement or otherwise.

31. If India wishes to use safeguarded source material for non-nuclear purposes, such as the production of alloys or ceramics, it shall agree with the Agency on the circumstances under which the safeguards on such material may be terminated.

32. Safeguards shall be terminated on a facility listed in the Annex after India and the Agency have jointly determined that the facility is no longer usable for any nuclear activity relevant from the point of view of safeguards. Safeguards on non-nuclear material, equipment and components subject to this Agreement may be terminated as and when the non-nuclear material, equipment or components have been returned to the supplier or arrangements have been made by the Agency to safeguard the non-nuclear material, equipment or components in the State to which it is being transferred, or when India and the Agency have jointly determined that the non-nuclear material, equipment or component in question has been consumed, is no longer usable for any nuclear activity relevant from the point of view of safeguards or has become practicably irrecoverable. Safeguards may be terminated on heavy water upon India's placing under safeguards as substitute the same amount of heavy water of equivalent or better heavy water concentration.

F. TRANSFERS

33. No safeguarded nuclear material shall be transferred outside the jurisdiction of India until the Agency has satisfied itself that one or more of the following conditions apply:

(a) The material is being returned, under the conditions specified in paragraph 30(a) of this Agreement, to the State that originally supplied it; or

(b) The material is being transferred subject to the provisions of paragraph 26 or 27 of this Agreement; or

(c) Arrangements have been made by the Agency to safeguard the material in the State to which it is being transferred; or

(d) The material was not subject to safeguards pursuant to a project agreement and will be subject, in the State to which it is being transferred, to safeguards other than those of the Agency but generally consistent with such safeguards and accepted by the Agency.

34. India shall notify the Agency of its intention to transfer within its jurisdiction any nuclear material, non-nuclear material, equipment or component subject to this Agreement to any facility or location in India to which paragraph 11(f) applies and shall provide to the Agency, before such transfer is effected, the necessary information to enable the Agency to make arrangements for the application of safeguards to such nuclear material, non-nuclear material, equipment or component after its transfer. The Agency shall also be given the opportunity as early as possible in advance of such a transfer to review the design of the facility for the sole purpose of determining that the arrangements provided for in this Agreement can be effectively applied. India may transfer the nuclear material, non-nuclear material, equipment or component only after the Agency has confirmed that it has made such arrangements.

35. India shall notify the Agency of its intention to transfer any nuclear material, non-nuclear material, equipment or component subject to this Agreement to a recipient which is not under the jurisdiction of India. Except as provided for in paragraph 30(a) of this Agreement, such nuclear material, non-nuclear material, equipment or component shall be so transferred only after the Agency has informed India that it has satisfied itself that Agency safeguards will apply with respect to the nuclear material, non-nuclear material, equipment or component in the recipient country. Upon receipt by the Agency of the notification of transfer from India and the confirmation of receipt by the recipient country, safeguards on such nuclear material, non-nuclear material, equipment or component shall be terminated under this Agreement.

36. The notifications referred to in paragraphs 34 and 35 of this Agreement shall be made to the Agency sufficiently in advance to enable it to make the arrangements required before the transfer is affected. The Agency shall promptly take any necessary action. The time limits for and the contents of these notifications shall be set out in the Subsidiary Arrangements.

III. SAFEGUARDS PROCEDURES

A. GENERAL PROCEDURES

Introduction

37. The safeguards procedures to be applied by the Agency are those specified in this Agreement, as well as such additional procedures as result from technological developments, and other procedures as may be agreed to between the Agency and India. The safeguards procedures set forth below shall be followed, as far as relevant, with respect to any item subject to this Agreement.

38. The Agency shall conclude with India Subsidiary Arrangements concerning the implementation of the safeguards procedures referred to above. The Subsidiary Arrangements shall also include any necessary arrangements for the application of safeguards to any item subject to this Agreement, including such containment and surveillance measures as are required for the effective implementation of safeguards. The Subsidiary Arrangements shall enter into force no later than six months after entry into force of this Agreement.

Design Review

39. The Agency shall review the design of principal nuclear facilities, for the sole purpose of satisfying itself that a facility will permit the effective application of safeguards.

40. The design review of a principal nuclear facility shall take place at as early a stage as possible. In particular, such review shall be carried out in the case of:

(a) An Agency project, before the project is approved;

(b) A bilateral or multilateral arrangement under which the responsibility for administering safeguards is to be transferred to the Agency, or an activity or facility unilaterally submitted by India, before the Agency assumes safeguards responsibilities with respect to the facility;

(c) A transfer of safeguarded nuclear material to a principal nuclear facility whose design has not previously been reviewed, before such transfer takes place; and

(d) A significant modification of a principal nuclear facility whose design has previously been reviewed, before such modification is undertaken.

41. To enable the Agency to perform the required design review, India shall submit to it relevant design information sufficient for the purpose, including information on such basic characteristics of the principal nuclear facility as may bear on the Agency's safeguards procedures. The Agency shall require only the minimum amount of information and data consistent with carrying out its responsibility under this section. It shall complete the review promptly after the submission of this information by India and shall notify the latter of its conclusions without delay.

42. If the Agency wishes to examine design information which India regards as sensitive, the Agency shall, if India so requests, conduct the examination on premises in India. Such information should not be physically transmitted to the Agency provided that it remains readily available for examination by the Agency in India.

Records

43. India shall arrange for the keeping of records with respect to principal nuclear facilities and also with respect to all safeguarded nuclear material outside such facilities. For this purpose India and the Agency shall agree on a system of records with respect to each facility and also with respect to such material, on the basis of proposals to be submitted by India in sufficient time to allow the Agency to review them before the records need to be kept.

44. All records shall be kept in English.

45. The records shall consist, as appropriate, of:

(a) Accounting records of all safeguarded nuclear material; and

(b) Operating records for principal nuclear facilities.

46. All records shall be retained for at least two years.

Reports

General Requirements

47. India shall submit to the Agency reports with respect to the production, processing and use of safeguarded nuclear material in or outside principal nuclear facilities. For this purpose, India and the Agency shall agree on a system of reports with respect to each facility and also with respect to safeguarded nuclear material outside such facilities, on the basis of proposals to be submitted by India in sufficient time to allow the Agency to review them before the reports need to be submitted. The reports need include only such information as is relevant for the purpose of safeguards.

48. All reports shall be submitted in English.

Routine Reports

49. Routine reports shall be based on the records compiled in accordance with paragraphs 43 to 46 of this Agreement and shall consist, as appropriate, of:

(a) Accounting reports showing the receipt, transfer out, inventory and use of all safeguarded nuclear material. The inventory shall indicate the nuclear and chemical composition and physical form of all material and its location on the date of the report; and

(b) Operating reports showing the use that has been made of each principal nuclear facility since the last report and, as far as possible, the programme of future work in the period until the next routine report is expected to reach the Agency.

50. The first routine report shall be submitted as soon as:

(a) There is any safeguarded nuclear material to be accounted for; or

(b) The principal nuclear facility to which it relates is in a condition to operate.

Progress in Construction

51. The Agency may request information as to when particular stages in the construction of a principal nuclear facility have been or are to be reached.

Special Reports

52. India shall report to the Agency without delay:

(a) If any unusual incident occurs involving actual or potential loss or destruction of, or damage to, any safeguarded nuclear material or principal nuclear facility;

(b) If there is good reason to believe that safeguarded nuclear material is lost or unaccounted for in quantities that exceed the normal operating and handling losses that have been accepted by the Agency as characteristic of the facility; or

(c) Disruption of operation of facilities listed in the Annex on account of material violation or breach of bilateral or multilateral arrangements to which India is a party.

53. India shall report to the Agency, as soon as possible, and in any case within two weeks, any transfer not requiring advance notification that will result in a significant change (to be defined by the Agency in agreement with India) in the quantity of safeguarded nuclear material in a principal nuclear facility. Such report shall indicate the amount and nature of the material and its intended use.

Amplification of Reports

54. At the Agency's request, India shall submit amplifications or clarifications of any report, in so far as relevant for the purpose of safeguards.

Inspections

General Procedures

55. The Agency may inspect any items subject to this Agreement.

56. The purpose of safeguards inspections under this Agreement shall be to verify compliance by India with this Agreement and to assist India in complying with this Agreement and in resolving any questions arising out of the implementation of safeguards.

57. The number, duration and intensity of inspections actually carried out shall be kept to the minimum consistent with the effective implementation of safeguards, and if the Agency considers that the authorized inspections are not all required, fewer shall be carried out.

58. Inspectors shall neither operate any facility themselves nor direct the staff of a facility to carry out any particular operation.

Routine Inspections

59. Routine inspections may include, as appropriate:

(a) Audit of records and reports;

(b) Verification of the amount of safeguarded nuclear material by physical inspection, measurement and sampling;

(c) Examination of principal nuclear facilities, including a check of their measuring instruments and operating characteristics; and

(d) Check of the operations carried out at principal nuclear facilities.

60. Whenever the Agency has the right of access to a principal nuclear facility at all times, it may perform inspections of which notice as required by paragraph 4 of the Inspectors Document need not be given, in so far as this is necessary for the effective application of safeguards. The actual procedures to implement these provisions shall be agreed upon between India and the Agency.

Initial Inspections of a Principal Nuclear Facility

61. To verify that the construction of a principal nuclear facility is in accordance with the design reviewed by the Agency, an initial inspection or inspections of the facility may be carried out:

(a) As soon as possible after the facility has come under Agency safeguards, in the case of a facility already in operation; and

(b) Before the facility starts to operate, in other cases.

62. The measuring instruments and operating characteristics of the facility shall be reviewed to the extent necessary for the purpose of implementing safeguards. Instruments that will be used to obtain data on the nuclear materials in the facility may be tested to determine their satisfactory functioning. Such testing may include the observation by inspectors of commissioning or routine tests by the staff of the facility, but shall not hamper or delay the construction, commissioning or normal operation of the facility.

Special Inspections

63. The Agency may carry out special inspections if:

(a) The study of a report indicates that such inspection is desirable; or

(b) Any unforeseen circumstance requires immediate action.

The Board shall subsequently be informed of the reasons for and the results of each such inspection.

64. The Agency may also carry out special inspections of substantial amounts of safeguarded nuclear material that are to be transferred outside the jurisdiction of India, for which purpose India shall give the Agency sufficient advance notice of any such proposed transfer.

B. SPECIAL PROCEDURES FOR REACTORS

Reports

65. The frequency of submission of routine reports shall be agreed between the Agency and India, taking into account the frequency established for routine inspections. However, at least two such reports shall be submitted each year and in no case shall more than 12 such reports be required in any year.

Inspections

66. One of the initial inspections of a reactor shall if possible be made just before the reactor first reaches criticality.

67. The maximum frequency of routine inspections of a reactor and of the safeguarded nuclear material in it shall be determined from the following table:

Whichever is the largest of: (a) Facility inventory (including loading); (b) Annual throughput; (c) Maximum potential annual production of special fissionable material (Effective kilograms of nuclear material)	Maximum number of routine inspections annually
Up to 1	0
More than 1 and up to 5	1
More than 5 and up to 10	2
More than 10 and up to 15	3
More than 15 and up to 20	4
More than 20 and up to 25	5
More than 25 and up to 30	6
More than 30 and up to 35	7
More than 35 and up to 40	8
More than 40 and up to 45	9
More than 45 and up to 50	10
More than 50 and up to 55	11
More than 55 and up to	12
60 More than 60	Right of access at all times

68. The actual frequency of inspection of a reactor shall take account of:

(a) The fact that India possesses irradiated fuel reprocessing facilities:

(b) The nature of the reactor; and

(c) The nature and amount of the nuclear material produced or used in the reactor.

C. SPECIAL PROCEDURES RELATING TO SAFEGUARDED NUCLEAR MATERIAL OUTSIDE PRINCIPAL NUCLEAR FACILITIES

Nuclear Material in Research and Development Facilities

Routine Reports

69. Only accounting reports need be submitted in respect of nuclear material in research and development facilities. The frequency of submission of such routine reports shall be agreed between the Agency and India, taking into account the frequency established for routine inspections; however, at least one such report shall be submitted each year and in no case shall more than 12 such reports be required in any year.

Routine Inspections

70. The maximum frequency of routine inspections of safeguarded nuclear material in a research and development facility shall be that specified in the table in paragraph 67 of this Agreement for the total amount of material in the facility.

Source Material in Sealed Storage

71. The following simplified procedures for safeguarding stockpiled source material shall be applied if India undertakes to store such material in a sealed storage facility and not to remove it therefrom without previously informing the Agency.

Design of Storage Facilities

72. India shall submit to the Agency information on the design of each sealed storage facility and agree with the Agency on the method and procedure for sealing it.

Routine Reports

73. Two routine accounting reports in respect of source material in sealed storage shall be submitted each year.

Routine Inspections

74. The Agency may perform one routine inspection of each sealed storage facility annually.

Removal of Material

75. India may remove safeguarded source material from a sealed storage facility after informing the Agency of the amount, type and intended use of the material to be removed, and providing sufficient other data in time to enable the Agency to continue safeguarding the material after it has been removed.

Nuclear Material in Other Locations

76. Except to the extent that safeguarded nuclear material outside of principal nuclear facilities is covered by any of the provisions set forth in paragraphs 69 to 75 of this Agreement, the following procedures shall be applied with respect to such material (for example, source material stored elsewhere than in a sealed storage facility, or special fissionable material used in a sealed neutron source in the field).

Routine Reports

77. Routine accounting reports in respect of all safeguarded nuclear material in this category shall be submitted periodically. The frequency of submission of such reports shall be agreed between the Agency and India, taking into account the frequency established for routine inspections; however, at least one such report shall be submitted each year and in no case shall more than 12 such reports be required in any year.

Routine Inspections

78. The maximum frequency of routine inspections of safeguarded nuclear material in this category shall be one inspection annually if the total amount of such material does not exceed five effective kilograms, and shall be determined from the table in paragraph 67 of this Agreement if the amount is greater.

D. PROVISIONS FOR REPROCESSING PLANTS

Introduction

79. Additional procedures applicable to the safeguarding of reprocessing plants are set out below.

Special Procedures

Reports

80. The frequency of submission of routine reports shall be once each calendar month.

Inspections

81. A reprocessing plant having an annual throughput not exceeding 5 effective kilograms of nuclear material, and the safeguarded nuclear material in it, may be routinely inspected twice a year. The reprocessing plant, having an annual throughput exceeding 5 effective kilograms of nuclear material, and the safeguarded nuclear material in it, may be inspected at all times. The arrangements for inspections set forth in paragraph 60 of this Agreement shall apply to all

inspections to be made under this paragraph. It is understood that for plants having an annual throughput of more than 60 effective kilograms, the right of access at all times would be normally be implemented by means of continuous inspection.

82. When a reprocessing plant is under Agency safeguards only because it contains safeguarded nuclear material, the inspection frequency shall be based on the rate of delivery of safeguarded nuclear material.

83. India and the Agency shall cooperate in making all the necessary arrangements to facilitate the taking, shipping or analysis of samples, due account being taken of the limitations imposed by the characteristics of a plant already in operation when placed under Agency safeguards.

Mixtures of Safeguarded and Unsafeguarded Nuclear Material

84. India and the Agency may agree on the following special arrangements in the case of a reprocessing plant which has not been supplied wholly or substantially under a project agreement, submitted to safeguards under a safeguards agreement by the parties to a bilateral or multilateral arrangement or unilaterally submitted to safeguards under a safeguards agreement, and in which safeguarded and unsafeguarded nuclear materials are present:

(a) Subject to the provisions of sub-paragraph (b) below, the Agency shall restrict its safeguards procedures to the area in which irradiated fuel is stored, until such time as all or any part of such fuel is transferred out of the storage area into other parts of the plant. Safeguards procedures shall cease to apply to the storage area or plant when either contains no safeguarded nuclear material; and

(b) Where possible, safeguarded nuclear material shall be measured and sampled separately from unsafeguarded material, and at as early a stage as possible. Where separate measurement, sampling or processing are not possible, the whole of the material being processed in that campaign shall be subject to the safeguards procedures set out in Part III.D of this Agreement. At the conclusion of the processing the nuclear material that is thereafter to be safeguarded shall be selected by agreement between India and the Agency from the whole output of the plant resulting from that campaign, due account being taken of any processing losses accepted by the Agency.

E. PROVISIONS FOR CONVERSION PLANTS, ENRICHMENT PLANTS AND FABRICATION PLANTS

Introduction

85. Additional procedures applicable to conversion plants and fabrication plants are set out below. This terminology is synonymous with the term "a plant for processing or fabricating nuclear material (excepting a mine or ore-processing plant)" which is used in paragraph 117 of this Agreement.

86. In the event that India decides to offer an enrichment plant in the future as a facility subject to this Agreement, the Agency and India shall consult and agree on the application of the Agency's safeguards procedures for enrichment plants before any such facility is added to the Annex.

Special Procedures

Reports

87. The frequency of submission of routine reports shall be once each calendar month.

Inspections

88. A conversion plant or a fabrication plant which has been supplied wholly or substantially under a project agreement, submitted to safeguards under a safeguards agreement by the parties to a bilateral or multilateral arrangement, or unilaterally submitted to safeguards under a safeguards agreement, and the nuclear material in it, may be inspected at all times if the plant inventory at any time, or the annual input, of nuclear material exceeds five effective kilograms. Where neither the inventory at any time, nor the annual input, exceeds five effective kilograms of nuclear material, the routine inspections shall not exceed two a year. The arrangements for inspections set forth in paragraph 57 of this Agreement shall apply to all inspections to be made under this paragraph. It is understood that, for plants having an inventory at any time, or an annual input, of more than 60 effective kilograms, the right of access at all times would normally be implemented by means of continuous inspection. Where neither the inventory at any time nor the annual input exceeds one effective kilogram of nuclear material, the plant would not normally be subject to routine inspection.

89. When a conversion plant or a fabrication plant which has not been supplied wholly or substantially under a project agreement, submitted to safeguards under a safeguards agreement by the parties to a bilateral or multilateral arrangement or unilaterally submitted to safeguards under a safeguards agreement contains safeguarded nuclear material, the frequency of routine inspections shall be based on the inventory at any time and the annual input of safeguarded nuclear material. Where the inventory at any time, or the annual input, of safeguarded nuclear material exceeds five effective kilograms the plant may be inspected at all times. Where neither the inventory at any time, nor the annual input, exceeds five effective kilograms of safeguarded nuclear material, the routine inspections shall not exceed two a year. The arrangements for inspection set forth in paragraph 60 shall apply to all inspections to be made under this paragraph. It is understood that, for plants having an inventory at any time, or an annual input, of more than 60 effective kilograms, the right of access at all times would normally be implemented by means of continuous inspection. Where neither the inventory at any time nor the annual input exceeds one effective kilogram of nuclear material, the plant would not normally be subject to routine inspection.

90. The intensity of inspection of safeguarded nuclear material at various steps in a conversion plant or a fabrication plant shall take account of the nature, isotopic composition and amount of safeguarded nuclear material in the plant. Safeguards shall be applied in accordance with the general principles set forth in paragraphs 4 to 8 of this Agreement. Emphasis shall be placed on inspection to control uranium of high enrichments and plutonium.

91. Where a plant may handle safeguarded and unsafeguarded nuclear material, India shall notify the Agency in advance of the programme for handling safeguarded batches to enable the Agency to make inspections during these periods, due account being also taken of the arrangements under paragraph 92 of this Agreement.

92. India and the Agency shall cooperate in making all the necessary arrangements to facilitate the preparation of inventories of safeguarded nuclear material and the taking, shipping and/or

analysis of samples, due account being taken of the limitations imposed by the characteristics of a plant already in operation when placed under Agency safeguards.

Residues, Scrap and Waste

93. India shall ensure that safeguarded nuclear material contained in residues, scrap or waste created during conversion or fabrication is recovered, as far as is practicable, in its facilities and within a reasonable period of time. If such recovery is not considered practicable by India, India and the Agency shall cooperate in making arrangements to account for and dispose of the material.

Safeguarded and Unsafeguarded Nuclear Material

94. India and the Agency may agree on the following special arrangements in the case of a conversion plant or a fabrication plant which has not been supplied wholly or substantially under a project agreement, submitted to safeguards under a safeguards agreement by the parties to a bilateral or multilateral arrangement or unilaterally submitted to safeguards under a safeguards agreement, and in which safeguarded and unsafeguarded nuclear material are both present:

(a) Subject to the provisions of sub-paragraph (b) below, the Agency shall restrict its safeguards procedures to the area in which safeguarded nuclear material is stored, until such time as all or any part of such nuclear material is transferred out of the storage area into other parts of the plant. Safeguards procedures shall cease to be applied to the storage area or plant when it contains no safeguarded nuclear material; and

(b) Where possible, safeguarded nuclear material shall be measured and sampled separately from unsafeguarded nuclear material, and at as early a stage as possible. Where separate measurement, sampling or processing is not possible, any nuclear material containing safeguarded nuclear material shall be subject to the safeguards procedures set out in Part III.E of this Agreement. At the conclusion of processing, the nuclear material that is thereafter to be safeguarded shall be selected, in accordance with paragraph 96 of this Agreement when applicable, by agreement between India and the Agency, due account being taken of any processing losses accepted by the Agency.

Blending of Nuclear Material

95. When safeguarded nuclear material is to be blended with either safeguarded or unsafeguarded nuclear material, the State shall notify the Agency sufficiently in advance of the programme of blending to enable the Agency to exercise its right to obtain evidence, through inspection of the blending operation or otherwise, that the blending is performed according to the programme.

96. When safeguarded and unsafeguarded nuclear material are blended, if the ratio of fissionable isotopes in the safeguarded component going into the blend to all the fissionable isotopes in the blend is 0.3 or greater, and if the concentration of fissionable isotopes in the unsafeguarded nuclear material is increased by such blending, then the whole blend shall remain subject to safeguards. In other cases, the following procedures shall apply:

(a) Plutonium/plutonium blending: The quantity of the blend that shall continue to be safeguarded shall be such that its weight, when multiplied by the square of the weight fraction of contained fissionable isotopes, is not less than the weight of originally

safeguarded plutonium multiplied by the square of the weight fraction of fissionable isotopes therein, provided however that:

(i) In cases where the weight of the whole blend, when multiplied by the square of the weight fraction of contained fissionable isotopes, is less than the weight of originally safeguarded plutonium multiplied by the square of the weight fraction of fissionable isotopes therein, the whole of the blend shall be safeguarded; and

(ii) The number of fissionable atoms in the portion of the blend that shall continue to be under safeguards shall in no case be less than the number of fissionable atoms in the originally safeguarded plutonium;

(b) Uranium/uranium blending: The quantity of the blend that shall continue to be safeguarded shall be such that the number of effective kilograms is not less than the number of effective kilograms in the originally safeguarded uranium, provided however that:

(i) In cases where the number of effective kilograms in the whole blend is less than in the safeguarded uranium, the whole of the blend shall be safeguarded; and

(ii) The number of fissionable atoms in the portion of the blend that shall continue to be under safeguards shall in no case be less than the number of fissionable atoms in the originally safeguarded uranium;

(c) Uranium/plutonium blending: The whole of the resultant blend shall be safeguarded until the uranium and the plutonium constituents are separated. After separation of the uranium and plutonium, safeguards shall apply to the originally safeguarded component; and

(d) Due account shall be taken of any processing losses agreed upon between the State and the Agency.

IV. AGENCY INSPECTORS

97. The provisions of paragraphs 1 to 10 and 12 to 14, inclusive, of the Inspectors Document shall apply to Agency inspectors performing functions pursuant to this Agreement. However, paragraph 4 of the Inspectors Document shall not apply with regard to any facility or to nuclear material to which the Agency has access at all times. The actual procedures to implement paragraph 60 of this Agreement shall be agreed to between the Agency and India.

98. The relevant provisions of the Agreement on the Privileges and Immunities of the Agency (INFCIRC/9/Rev.2) shall apply to the Agency, its inspectors performing functions under this Agreement and to any property of the Agency used by them in the performance of their functions under this Agreement.

V. PHYSICAL PROTECTION

99. India shall take all suitable measures necessary for the physical protection of the facilities and nuclear material subject to this Agreement, taking into account the recommendations made in Agency's document INFCIRC/225/Rev.4, as may be amended from time to time.

VI. SYSTEM OF ACCOUNTING AND CONTROL

100. India shall establish and maintain a system of accounting for and control of all items subject to safeguards under this Agreement, in accordance with provisions to be set out in the Subsidiary Arrangements.

VII. FINANCE

101. India and the Agency shall each bear any expense incurred in the implementation of their responsibilities under this Agreement. The Agency shall reimburse India for any special expenses, including those referred to in paragraph 6 of the Inspectors Document, incurred by India or persons under its jurisdiction at the written request of the Agency, if India notified the Agency before the expense was incurred that reimbursement would be required. These provisions shall not prejudice the allocation of expenses attributable to a failure by either India or the Agency to comply with this Agreement.

102. India shall ensure that any protection against third party liability, including any insurance or other financial security, in respect of a nuclear incident occurring in a facility under its jurisdiction shall apply to the Agency and its inspectors when carrying out their functions under this Agreement as that protection applies to nationals of India.

VIII. NON-COMPLIANCE

103. If the Board determines in accordance with Article XII.C of the Statute of the Agency that there has been any non-compliance by India with this Agreement, the Board shall call upon India to remedy such non-compliance forthwith, and shall make such reports as it deems appropriate. In the event of failure by India to take full remedial action within a reasonable time, the Board may take any other measures provided for in Article XII.C of the Statute. The Agency shall promptly notify India in the event of any determination by the Board pursuant in this regard.

IX. COOPERATION, INTERPRETATION AND APPLICATION OF THE AGREEMENT AND SETTLEMENT OF DISPUTES

104. The Agency and India shall cooperate to facilitate the implementation of this Agreement.

105. At the request of either India or the Agency, there shall be consultations about any question arising out of the interpretation or application of this Agreement. India and the Agency shall endeavour to settle by negotiation any dispute arising from the interpretation or application of this Agreement. India shall have the right to request that any question arising out of the interpretation or application of the Agreement be considered by the Board. The Board shall invite India to participate in the discussion of any such question by the Board.

106. In the event of any question or questions arising from the implementation of this Agreement, the Agency shall provide India with an opportunity to clarify and facilitate the resolution of such questions. The Agency shall not draw any conclusions in connection with the question or questions until India has had an opportunity to provide clarifications.

X. FINAL CLAUSES

107. India and the Agency shall, at the request of either of them, consult about amending this Agreement.

108. This Agreement shall enter into force on the date on which the Agency receives from India written notification that India's statutory and/or constitutional requirements for entry into force have been met.

109. This Agreement shall remain in force until, in accordance with its provisions, safeguards have been terminated on all items subject to this Agreement, or until terminated by mutual agreement of the parties to this Agreement.

XI. DEFINITIONS

110. "Agency" means the International Atomic Energy Agency.

111. "Board" means the Board of Governors of the Agency.

112. "Campaign" means the period during which the chemical processing equipment in a reprocessing plant is operated between two successive wash-outs of the nuclear material present in the equipment.

113. "Conversion plant" means a facility (excepting a mine or ore-processing plant) to improve unirradiated nuclear material, or irradiated nuclear material that has been separated from fission products, by changing its chemical or physical form so as to facilitate further use or processing. The term conversion plant includes the facility's storage and analytical sections. The term does not include a plant intended for separating the isotopes of nuclear material.

114. "Director General" means the Director General of the Agency.

115. "Effective kilograms" means:

(i) In the case of plutonium, its weight in kilograms;

(ii) In the case of uranium with an enrichment of 0.01 (1 %) and above, its weight in kilograms multiplied by the square of its enrichment;

(iii) In the case of uranium with an enrichment below 0.01 (1 %) and above 0.005 (0.5 %), its weight in kilograms multiplied by 0.0001; and

(iv) In the case of depleted uranium with an enrichment of 0.005 (0.5 %) or below, and in the case of thorium, its weight in kilograms multiplied by 0.00005.

116. "Enrichment plant" means a plant for separating the isotopes of nuclear material.

117. "Facility" means, for the purposes of this Agreement:

(i) A "principal nuclear facility", which means a reactor, a plant for processing nuclear material irradiated in a reactor, a plant for separating the isotopes of a nuclear material, a

plant for processing or fabricating nuclear material (excepting a mine or ore-processing plant) or a facility or plant of such other type as may be designated by the Board from time to time, including associated storage facilities, as well as a critical facility or a separate storage installation;

(ii) A research and development facility as defined in paragraph 127 of this Agreement;

(iii) Any location where nuclear material in amounts greater than one effective kilogram is customarily used;

(iv) A plant for the upgrading of heavy water or a separate storage installation for heavy water.

118. "Fuel fabrication plant" means a plant to manufacture fuel elements or other components containing nuclear material and includes the plant's storage and analytical sections.

119. "Improved" means, with respect to nuclear material, that either:

(i) The concentration of fissionable isotopes in it has been increased or

(ii) The amount of chemically separable fissionable isotopes in it has been increased; or

(iii) Its chemical or physical form has been changed so as to facilitate further use or processing.

120. "Inspector" means an Agent official designated in accordance with the Inspectors Document.

121. "Inspectors Document" means the Annex to the Agency's document GC(V)/INF/39.

122. "Nuclear material" means any source or special fissionable material as defined in Article XX of the Statute.

123. "Produced, processed or used" means any utilization or any alteration of the physical or chemical form or composition, including any change of the isotopic composition, of nuclear material;

124. "Project agreement" means a safeguards agreement relating to an Agency project and containing provisions as foreseen in Article XI.F.4.(b) of the Statute.

125. "Reactor" means any device in which a controlled, self-sustaining fission chain-reaction can be maintained.

126. "Reprocessing plant" means a facility to separate irradiated nuclear materials and fission products, and includes the facility's head-end treatment section and its associated storage and analytical sections. This term is synonymous with the term "a plant for processing nuclear material irradiated in a reactor" which is used in paragraph 117 of this Agreement.

127. "Research and development facility" means a facility, other than a principal nuclear facility, used for research or development in the field of nuclear energy.

128. "Statute" means the Statute of the Agency.

129. "Throughput" means the rate at which nuclear material is introduced into a facility operating at full capacity.

130. “Unilaterally submitted” means submitted by India to Agency safeguards.

DONE at Vienna, on the day of 2008, in duplicate, in the English language.

For the GOVERNMENT OF INDIA:

For the INTERNATIONAL ATOMIC ENERGY AGENCY:

ANNEX

List of facilities subject to safeguards under the Agreement between the government of India and the International Atomic Energy Agency for the application of safeguards to civilian nuclear facilities

	FACILITY OFFERED FOR SAFEGUARDS BY INDIA	**DATE OF RECEIPT OF NOTIFICATION**

Nuclear Suppliers Group's

Statement on Civil Nuclear Cooperation with India*

1. At the Extraordinary Plenary Meeting on 6 September 2008 the Participating Governments of the Nuclear Suppliers Group decided that they:

   a. Desire to contribute to the effectiveness and integrity of the global nonproliferation regime, and to the widest possible implementation of the provisions and objectives of the Treaty on the Non-Proliferation of Nuclear Weapons;

   b. Seek to avert the further spread of nuclear weapons;

   c. Wish to pursue mechanisms to affect positively the nonproliferation commitments and actions of all states;

   d. Seek to promote fundamental principles of safeguards and export controls for nuclear transfers for peaceful purposes; and

   e. Note the energy needs of India.

2. Participating Governments have taken note of steps that India has voluntarily taken with respect to the following commitments and actions:

   a. Deciding to separate civilian nuclear facilities in a phased manner and to file a declaration regarding its civilian nuclear facilities with the IAEA, in accordance with its Separation Plan (circulated as INFCIRC/731);

   b. Concluding negotiations with the IAEA and obtaining approval by the Board of Governors on 1 August 2008 for an "Agreement between the Government of India and the IAEA for the Application of Safeguards to Civilian Nuclear Facilities," in accordance with IAEA standards, principles, and practices (including IAEA Board of Governors Document GOV/1621);

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* Reproduction of the text as submitted to the IAEA, *Information Circular*, INFCIRC/734 (Corrected): Communication dated 10 September 2008 received from the Permanent Mission of Germany to the Agency regarding a "Statement on Civil Nuclear Cooperation with India".

c. Committing to sign and adhere to an Additional Protocol with respect to India's civil nuclear facilities;

d. Refraining from transfer of enrichment and reprocessing technologies to states that do not have them and supporting international efforts to limit their spread;

e. Instituting a national export control system capable of effectively controlling transfers of multilaterally controlled nuclear and nuclear-related material, equipment and technology;

f. Harmonizing its export control lists and guidelines with those of the Nuclear Suppliers Group and committing to adhere to the Nuclear Suppliers Group Guidelines; and

g. Continuing its unilateral moratorium on nuclear testing, and its readiness to work with others towards the conclusion of a multilateral Fissile Material Cutoff Treaty.

3. Based on the commitments and actions mentioned above, as reiterated by India on September 5, 2008, and without prejudice to national positions thereon, Participating Governments have adopted and will implement the following policy on civil nuclear cooperation by Participating Governments with the IAEA-safeguarded Indian civil nuclear program:

a. Notwithstanding paragraphs 4(a), 4(b) and 4(c) of INFCIRC/254/Rev.9/Part 1, Participating Governments may transfer trigger list items and/or related technology to India for peaceful purposes and for use in IAEA safeguarded civil nuclear facilities, provided that the transfer satisfies all other provisions of INFCIRC/254/Part 1, as revised, and provided that transfers of sensitive exports remain subject to paragraphs 6 and 7 of the Guidelines.

b. Notwithstanding paragraphs 4(a) and 4(b) of INFCIRC/254/Rev.7/Part 2, Participating Governments may transfer nuclear-related dual-use equipment, materials, software, and related technology to India for peaceful purposes and for use in IAEA safeguarded civil nuclear facilities, provided that the transfer satisfies all other provisions of INFCIRC/254/Part 2, as revised.

c. At each Plenary, Participating Governments shall notify each other of approved transfers to India of Annex A and B items listed in INFCIRC/254/Part 1, as revised. Participating Governments are also invited to exchange information, including about their own bilateral agreements with India.

d. With a view to intensification of dialogue and cooperation with India, the Chairman is requested to confer and consult with India and keep the Plenary informed of these consultations.

e. Participating Governments will maintain contact and consult through regular channels, including the Consultative Group and Plenary, for the purpose of considering matters connected with the implementation of all aspects of this Statement taking into account relevant international commitments or bilateral agreements with India. In the event that one or more Participating Governments consider that circumstances have arisen which require consultations, Participating Governments will meet, and then act in accordance with paragraph 16 of the Guidelines.

4. In order to facilitate India's adherence to INFCIRC/254/Parts 1 and 2 and to remain current in its implementation of the Guidelines, the NSG Chair is requested to consult with India regarding changes to and implementation of the Guidelines and inform the Plenary of the outcome of the dialogue with India. Consultations with India regarding proposed amendments will facilitate their effective implementation by India.

5. Upon request by Participating Governments, the Chairman is requested to submit this Statement to the IAEA Director General with a request that it be circulated to all Member States.

TEXT

U.S. ATOMIC ENERGY ACT

Section 123. Cooperation With Other Nations

No cooperation with any nation, group of nations or regional defense organization pursuant to section 53, 54a., 57, 64, 82, 91, 103, 104, or 144 shall be undertaken until–

a. the proposed agreement for cooperation has been submitted to the President, which proposed agreement shall include the terms, conditions, duration, nature, and scope of the cooperation; and shall include the following requirements:

(1) a guaranty by the cooperating party that safeguards as set forth in the agreement for cooperation will be maintained with respect to all nuclear materials and equipment transferred pursuant thereto, and with respect to all special nuclear material used in or produced through the use of such nuclear materials and equipment, so long as the material or equipment remains under the jurisdiction or control of the cooperating party, irrespective of the duration of other provisions in the agreement or whether the agreement is terminated or suspended for any reason;

(2) in the case of non-nuclear-weapon states, a requirement, as a condition of continued United States nuclear supply under the agreement for cooperation, that IAEA safeguards be maintained with respect to all nuclear materials in all peaceful nuclear activities within the territory of such state, under its jurisdiction, or carried out under its control anywhere;

(3) except in the case of those agreements for cooperation arranged pursuant to subsection 91c., a guaranty by the cooperating party that no nuclear materials and equipment or sensitive nuclear technology to be transferred pursuant to such agreement, and no special nuclear material produced through the use of any nuclear materials and equipment or sensitive nuclear technology transferred pursuant to such agreement, will be used for any nuclear explosive device, or for research on or development of any nuclear explosive device, or for any other military purpose;

(4) except in the case of those agreements for cooperation arranged pursuant to subsection 91c. and agreements for cooperation with nuclear-weapon states, a stipulation that the United States shall have the right to require the return of any nuclear materials and equipment transferred pursuant thereto and any special nuclear material produced through the use thereof if the cooperating party detonates a nuclear explosive device or terminates or abrogates an agreement providing for IAEA safeguards;

(5) a guaranty by the cooperating party that any material or any Restricted Data transferred pursuant to the agreement for cooperation and, except in the case of agreements arranged pursuant to

subsection 91c., 144b., 144c., or 144d.,[1] any production or utilization facility transferred pursuant to the agreement for cooperation or any special nuclear material produced through the use of any such facility or through the use of any material transferred pursuant to the agreement, will not be transferred to unauthorized persons or beyond the jurisdiction or control of the cooperating party without the consent of the United States;

(6) a guaranty by the cooperating party that adequate physical security will be maintained with respect to any nuclear material transferred pursuant to such agreement and with respect to any special nuclear material used in or produced through the use of any material, production facility, or utilization facility transferred pursuant to such agreement;

(7) except in the case of agreements for cooperation arranged pursuant to subsection 91c., 144b., 144c., or 144d.,[2] a guaranty by the cooperating party that no material transferred pursuant to the agreement for cooperation and no material used in or produced through the use of any material, production facility, or utilization facility transferred pursuant to the agreement for cooperation will be reprocessed, enriched or (in the case of plutonium, uranium 233, or uranium enriched to greater than twenty percent in the isotope 235, or other nuclear materials which have been irradiated) otherwise altered in form or content without the prior approval of the United States;

(8) except in the case of agreements for cooperation arranged pursuant to subsection 91c., 144b., 144c., or 144d.,[3] a guaranty by the cooperating party that no plutonium, no uranium 233, and no uranium enriched to greater than twenty percent in the isotope 235, transferred pursuant to the agreement for cooperation, or recovered from any source or special nuclear material so transferred or from any source or special nuclear material used in any production facility or utilization facility transferred pursuant to the agreement for cooperation, will be stored in any facility that has not been approved in advance by the United States; and

(9) except in the case of agreements for cooperation arranged pursuant to subsection 91c., 144b., 144c., or 144d.,[4] a guaranty by the cooperating party that any special nuclear material, production facility, or utilization facility produced or constructed under the jurisdiction of the cooperating party by or through the use of any sensitive nuclear technology transferred pursuant to such agreement for cooperation will be subject to all the requirements specified in this subsection.

The President may exempt a proposed agreement for cooperation (except an agreement arranged pursuant to subsection 91c., 144b., 144c., or 144d.[5]) from any of the requirements of the foregoing sentence if he determines that inclusion of any such requirement would be seriously prejudicial to the achievement of United States non-proliferation objectives or otherwise jeopardize the common defense and security. Except in the case of those agreements for cooperation arranged pursuant to subsection 91c., 144b., 144c., or 144d.[6] any proposed agreement for cooperation shall be negotiated by the Secretary of State, with the technical assistance and concurrence of the Secretary of Energy and[7] after consultation with the Commission shall be submitted to the President jointly by the Secretary of

1. As amended by Public Law 103-337 (108 Stat. 2663), 5 October, 1994.
2. As amended by Public Law 103-337 (108 Stat. 2663), 5 October, 1994.
3. As amended by Public Law 103-337 (108 Stat. 2663), 5 October 1994.
4. As amended by Public Law 103-337 (108 Stat. 2663), 5 October 1994.
5. As amended by Public Law 103-337 (108 Stat. 3092), 5 October 1994.
6. As amended by Public Law 103-337 (108 Stat. 3092), 5 October 1994.
7. Public law 105-277 (112 Stat. 2681-774), 21 October 1998 struck “and in consultation with the Director of the Arms Control and Disarmament Agency (‘the Director’)”.

State and the Secretary of Energy accompanied by the views and recommendations of the Secretary of State, the Secretary of Energy and the Nuclear Regulatory Commission. Each Nuclear Proliferation Assessment Statement prepared pursuant to this Act shall be accompanied by a classified annex, prepared in consultation with the Director of Central Intelligence, summarizing relevant classified information. The Secretary of State shall also provide to the president an unclassified Nuclear Proliferation Assessment Statement (A) which shall analyze the consistency of the text of the proposed agreement for cooperation with all the requirements of this Act, with specific attention to whether the proposed agreement is consistent with each of the criteria set forth in this subsection, and (B)[8] regarding the adequacy of the safeguards and other control mechanisms and the peaceful use assurances contained in the agreement for cooperation to ensure that any assistance furnished thereunder will not be used to further any military or nuclear explosive purpose. In the case of those agreements for cooperation arranged pursuant to subsection 91c., 144b., 144c., or 144d.,[9] any proposed agreement for cooperation shall be submitted to the President by the Secretary of Energy or, in the case of those agreements for cooperation arranged pursuant to subsection 91c., or 144b., which are to be implemented by the Department of Defense, by the Secretary of Defense;

b. the President has submitted text of the proposed agreement for cooperation, except an agreement arranged pursuant to section 91c., 144b., 144c., or 144d. of section 144,[10] together with the accompanying unclassified Nuclear Proliferation Assessment Statement, to the Committee on Foreign Relations of the Senate and the Committee on Foreign Affairs of the House of Representatives, the President has consulted with such Committees for a period of not less than thirty days of continuous session (as defined in section 130g. of this Act) concerning the consistency of the terms of the proposed agreement with all the requirements of this Act, and[11] the President has approved and authorized the execution of the proposed agreement for cooperation and has made a determination in writing that the performance of the proposed agreement will promote and will not constitute an unreasonable risk to, the common defense and security;

c. the proposed agreement for cooperation (if not an agreement subject to subsection d.), together with the approval and determination of the President, has been submitted to the Committee on Foreign Affairs[12] of the House of Representatives and the Committee on Foreign Relations of the Senate for a period of thirty days of continuous session (as defined in subsection 130g.): *Provided, however,* That these committees, after having received such agreement for cooperation, may by resolution in writing waive the conditions of all or any portion of such thirty-day period; and

d. the proposed agreement for cooperation (if arranged pursuant to subsection 91c., 144b., 144c., or 144d., or if entailing implementation of sections 53, 54a., 103, or 104 in relation to a reactor that may be capable of producing more than five thermal megawatts or special nuclear material for use in connection therewith) has been submitted to the Congress, together with the approval and determination of the President, for a period of sixty days of continuous session (as defined in subsection 130g. of this Act) and referred to the Committee on Foreign Affairs of the House of Representatives and the Committee on Foreign Relations of the Senate, and in addition, in the case of a proposed agreement for cooperation arranged pursuant to subsection 91c., 144b., 144c., or 144d., the Committee on Armed Services of the House of Representatives and the Committee on Armed Services of the Senate, but such proposed agreement for cooperation shall not become effective if during such

8. As amended by Public Law 99-64, section 301 (a)(1).
9. As amended by Public Law 103-337 (108 Stat. 3092), 5 October 1994.
10. As amended by Public Law 103-337 (108 Stat. 32092), 5 October 1994.
11. As amended by Public Law 99-64, section 301(a)(2).
12. Public Law 103-437 (108 Stat. 4581) (1994), section 15 (f)(5) struck “International Relations” and substituted “Foreign Affairs” throughout section.

sixty-day period the Congress adopts, and there is enacted, a joint resolution[13] stating in substance that the Congress does not favor the proposed agreement for cooperation: *Provided*, That the sixty-day period shall not begin until a Nuclear Proliferation Assessment Statement prepared by the Secretary of State, and any annexes thereto,[14] when required by subsection 123a., have been submitted to the Congress: *Provided further*, That an agreement for cooperation exempted by the President pursuant to subsection a. from any requirement contained in that subsection, or an agreement exempted pursuant to section 104(a)(1) of the Henry J. Hyde United States-India Peaceful Atomic Energy Cooperation Act of 2006,[15] shall not become effective unless the Congress adopts, and there is enacted, a joint resolution stating that the Congress does favor such agreement.[16] During the sixty-day period the Committee on Foreign Affairs of the House of Representatives and the Committee on Foreign Relations of the Senate shall each hold hearings on the proposed agreement for cooperation and submit a report to their respective bodies recommending whether it should be approved or disapproved.[17] Any such proposed agreement for cooperation shall be considered pursuant to the procedures set forth in section 130i. of this Act.[18]

Following submission of a proposed agreement for cooperation (except an agreement for cooperation arranged pursuant to subsection 91c., 144b., 144c., or 144d.) to the Committee on Foreign Affairs of the House of Representatives and the Committee on Foreign Relations of the Senate, the Nuclear Regulatory Commission, the Department of State, the Department of Energy, and the Department of Defense shall, upon the request of either of those committees, promptly furnish to those committees their views as to whether the safeguards and other controls contained therein provide an adequate framework to ensure that any export as contemplated by such agreement will not be inimical to or constitute an unreasonable risk to the common defense and security.

If, after the date of enactment of the Nuclear Non-Proliferation Act of 1978, the Congress fails to disapprove a proposed agreement for cooperation which exempts the recipient nation from the requirement set forth in subsection 123a.(2), such failure to act shall constitute a failure to adopt a resolution of disapproval pursuant to subsection 128b.(3) for purposes of the Commission's consideration of applications and requests under section 126a.(2) and there shall be no congressional review pursuant to section 128 of any subsequent license or authorization with respect to that state until the first such license or authorization which is issued after twelve months from the elapse of the sixty-day period in which the agreement for cooperation in question is reviewed by the Congress.[19]

e. The President shall keep the Committee on Foreign Affairs of the House of Representatives and the Committee on Foreign Relations of the Senate fully and currently informed of any initiative or negotiations relating to a new or amended agreement for peaceful nuclear cooperation pursuant to this section (except an agreement arranged pursuant to section 91 c., 144 b., 144 c., or 144 d., or an amendment thereto).[20]

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13. As amended by Public Law 99-64, section 301(a)(1).
14. Public Law 105-277 (112 Stat. 774), 21 October 1998, struck "Nuclear Proliferation Assessment Statement prepared by the Director of the Arms Control and Disarmament Agency".
15. Public law 109-401 (120 Stat. 2734) (2006) amended section to include exemption clause from Henry J. Hyde United States-India Peaceful Atomic Energy Cooperation Act of 2006.
16. As amended by Public Law 99-64, section 301(b)(2).
17. As amended by Public Law 99-64, section 301(a)(3).
18. As amended by Public Law 99-64, section 301(b)(3).
19. [….] editor chose not to include the footnote.
20. Public Law 110-369 (122 Stat. 4028) (2008), added sub-section e.

Article

Environmental Law and Nuclear Law: A Growing Symbiosis

by Sam Emmerechts[*]

International nuclear law has developed over the last 50 years and during most of its history its main focus has been on protecting people and property. Protection of the environment has only made an occasional appearance, and the international conventions on nuclear third party liability amply illustrate this point. Under the Paris Convention on Third Party Liability in the Field of Nuclear Energy (1960) and the Vienna Convention on Civil Liability for Nuclear Damage (1963) the notion of nuclear damage is understood to cover personal injury and property damage causally related to a nuclear incident. The conventions do not refer to environmental damage at all.

However, that does not necessarily mean that such damage is not compensable under the conventions. Both instruments leave it to the competent national court to decide upon what constitutes *property damage*. This is done intentionally, given the wide divergence of tort law principles and jurisprudence in those countries which are parties to these conventions. Some countries have adopted a sufficiently broad interpretation of *property damage* so as to include environmental damage; others have not. The Vienna Convention even envisages a second possibility for covering environmental damage under the heading "any other loss or damage so arising or resulting if and to the extent that the law of the competent court so provides".[1] Damage to the environment may thus be compensated under the Vienna Convention if the applicable national law so provides.

This article is divided into two parts. The first part deals with the interrelationship between environmental law and nuclear law. It specifically addresses selective topics which the author considers as substantial proof that environmental law is in evidence in the nuclear field. These topics are access to nuclear information, public participation in nuclear decision making and

* Legal Affairs Section of the OECD Nuclear Energy Agency. The author wishes to thank Ms. J. Schwartz, Head of Legal Affairs of the OECD Nuclear Energy Agency and Dr. N. Pelzer, retired academic, University of Göttingen, Germany, for their valuable comments. The author alone is responsible for the facts and opinions expressed in this article. The views contained herein do not necessarily reflect the official position of the OECD Nuclear Energy Agency.

1. Article I(1)(k) of the Vienna Convention on Civil Liability for Nuclear Damage (1963).

prevention and compensation of environmental damage caused by nuclear incidents. Environmental law will be considered in its narrow sense, meaning the law that seeks to protect nature (the ecosystem or the natural environment) such as soil, water, air and biodiversity. The position of the author is that the importance of environmental law for nuclear activities is increasing and may lead to a growing symbiosis with nuclear law. Environmental law and nuclear law share the same objectives: protection against, mitigation of, and compensation for damage to the environment.

In the second part a specific problem that touches upon the extraterritorial effect of environmental legislation in the nuclear field will be examined. At the beginning of the 21st century, it can be expected that vendors of nuclear facilities will spare no efforts in trying to enter new markets all over the world. Countries with more developed environmental legislation may be tempted to impose their own stricter environmental requirements on the construction of nuclear facilities by their national vendors in customer countries. This part of the article will analyse whether public international law permits national legislatures to apply and enforce their environmental laws to the construction of nuclear facilities abroad. The author believes that there may well be a legal basis under customary international law justifying the application of national environmental law to the construction of nuclear facilities and the performance of work on nuclear facilities in foreign countries, but there would appear to be none permitting the enforcement of these laws in the absence of an agreement with the foreign country.

1. Environmental law governing the nuclear field

1.1 Introduction

Protection of the environment was not a major concern for the original drafters of the international nuclear law conventions but this has changed over time. Public awareness of the harmful effects of certain industrial activities (such as chemicals and asbestos) in the 1970s and 1980s led to an increasing concern for protecting the environment which impacted the nuclear field as well. Following the catastrophic accident at the Chernobyl nuclear power plant in 1986, many governments recognised that they needed to better protect the environment. Environmental law was the right instrument to help them achieve that goal and it now applies to the nuclear field in two different ways, one direct and the other indirect. It does so directly by making nuclear activities subject to international environmental law; it does so indirectly by introducing the concept of environmental protection into international nuclear law.

Environmental law made its *indirect* appearance in the nuclear field through the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (1986). That convention provides that contracting parties shall protect not only life and property, but also the environment from the effects of radioactive releases.[2] Other specific international nuclear law instruments followed this example and turned the protection of the environment into one of their principal objectives. Such was the case with the Convention on Nuclear Safety (1994)[3] and the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste

2. Article 1 of the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (1986).

3. Article 1 of the Convention on Nuclear Safety (1994).

Management (1997).[4] The Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage (1997), the Convention on Supplementary Compensation for Nuclear Damage (1997) and the Protocol to Amend the Paris Convention on Nuclear Third Party Liability (2004) ("the revised and new nuclear liability conventions") all hold nuclear operators liable for the cost of measures of reinstating a significantly impaired environment or for economic loss arising from an economic interest in the use or enjoyment of the environment that has been significantly impaired due to a nuclear incident.[5]

Environmental law also *directly* applies to nuclear activities, albeit not very consistently. Environmental legislation naturally tends to cover all activities that may cause environmental damage, and there is no doubt that nuclear activities may cause such damage. Yet only some international environmental law conventions apply to nuclear activities while others do not.

The London Convention on the Prevention of Marine Pollution by Dumping of Waste and other Matter (1972) is an example of an international environmental law convention which prohibits any release of high-level radioactive wastes in the sea. Other examples of international environmental law conventions that apply to the nuclear field include the Convention for the Prevention of Marine Pollution from Land-Based Sources (1974) which obliges contracting parties to adopt measures to forestall and eliminate pollution of the maritime area by radioactive substances from land-based sources,[6] the Espoo Convention on Environmental Impact Assessment in a Trans-boundary Context (1991) ("Espoo Convention") which requires environmental impact assessments for nuclear energy projects and the Aarhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (1998) ("Aarhus Convention") which obliges public authorities, *inter alia*, to give the public access to certain types of nuclear information.

However, other international or regional environmental law instruments exclude nuclear activities from their application because such activities are already effectively governed by specific legislation or by other international conventions. The EU Environmental Liability Directive (2004)[7] illustrates this point. The directive does not apply to environmental damage or to any imminent threat of such damage arising from a nuclear incident in respect of which liability or compensation falls within the scope of any of the international nuclear liability conventions, including any future amendments thereof, which is in force in the member state concerned.[8] The

4. Article 1 of the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (1997).

5. See the definitions of nuclear damage in Article 1 of the 1997 Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage, the Convention on Supplementary Compensation for Nuclear Damage and the 2004 Protocol to Amend the Paris Convention on Third Party Liability in the Field of Nuclear Energy. For more information on the notion of "environmental damage", see Chapter 1.4 of this article.

6. The Convention for the Prevention of Marine Pollution from Land-Based Sources (1974) was later replaced by the OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic (1992).

7. Directive 2004/35/CE of the European Parliament and of the Council of 21 April 2004 on Environmental Liability with regard to the Prevention and Remedying of Environmental Damage (*OJ L 143, 30.4.2004, p. 56*).

8. The Environmental Liability Directive does provide however that this exclusion may be amended on a proposal from the European Commission to the European Parliament and the Council of Ministers

Convention on Liability and Compensation of Damage in connection with the Carriage of Hazardous and Noxious Substances by Sea (1996) ("HNS Convention"), the Convention on Civil Liability for Damage caused during Carriage of Dangerous Goods by Road, Rail and Inland Navigation Vessels (1989) ("CRTD Convention") and the Lugano Convention on Civil Liability for Damage Resulting from Activities Dangerous to the Environment (1993)[9] are additional examples of this approach.

1.2 Public access to nuclear information

Laws providing for the public's right of access to information and participation in decision-making processes were almost non-existent in the early days of nuclear energy development and production. Most governments did not see the need to inform the public of its potential risks or invite public participation in nuclear policy or project decisions.[10] The concepts of transparency of information and stakeholder involvement came to the field of nuclear energy through environmental legislation. In fact, environmental law supported and accelerated a general breakthrough in public information and participation rights in many other fields of law, including nuclear law.[11]

At the international level, the United Nations Stockholm Declaration on the Human Environment (1972) and later its Rio Declaration on Environment and Development (1992) served as driving forces for the adoption of international and national legal instruments on access to information and public participation in decision making.[12] Legal instruments were seen as the appropriate means of guaranteeing debate on proposed projects by all stakeholders, thereby aiming to ensure that potentially adverse environmental consequences were either prevented or acceptably mitigated. At bilateral level, a number of agreements were concluded, particularly in Europe, which grant citizens of neighbouring states certain rights of participation in national licensing procedures.[13]

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before 30 April 2014 on the basis of a review of the coverage by the international nuclear liability conventions (see Article 18).

9. The Lugano Convention has not yet entered into force.

10. In some states, legal provisions on public participation in nuclear decision-making *did* exist at an early stage. See, for example, the National Environmental Policy Act of 1969 ("NEPA") in the United States.

11. Reflections on 30 Years of EU Environmental Law, Ed. Prof. Macrory, R., *Europa Law Publishing*, 2005, p. 64. See also Eberson, J., "The Notion of Public Participation in International Environmental Law", *Yearbook of International Environmental Law*, 1997, vol. 8, p. 51.

12. Principle 1 of the Stockholm Declaration states: "Man has the fundamental right to…an environment of a quality that permits a life of dignity and well-being, and he bears a solemn responsibility to protect and improve the environment for present and future generations (…)". Principle 10 of the Rio Declaration states: "Environmental issues are best handled with participation of all concerned citizens (…). At the national level, each individual shall have appropriate access to information concerning the environment that is held by public authorities … and the opportunity to participate in decision-making processes (…). Effective access to judicial and administrative proceedings … shall be provided".

13. For example, Agreement between Germany and Switzerland for the Reciprocal Provision of Information concerning the Construction and Operation of Nuclear Installations in Frontier Areas of 10 August 1982, available at http://untreaty.un.org/unts/60001_120000/12/37/00023841.pdf.

However, it was only in 1997 that a binding international legal instrument addressing the public's right to access information and to be consulted was adopted specifically for the nuclear field. The Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (1997) ("Joint Convention") makes informing the public about the safety of spent nuclear fuel and radioactive waste management facilities mandatory. Contracting parties must not only make such information available to the public but they must consult with, and provide general data to other contracting parties in the vicinity of a facility, insofar as they are likely to be affected by it.[14]

The Aarhus Convention (1998) is another important international environmental law instrument that stresses the value of access to nuclear information. It grants the public[15] three rights: the right to environmental information from public authorities; the right to participate in environmental decision-making by public authorities; and the right to judicial redress when the two previous rights or national environmental law has been violated. The Aarhus Convention recognises that the public must have access to "environmental information" in order to assert its right to protect the environment for present and future generations.[16]

Requests for information on nuclear projects are often covered by the Aarhus Convention simply because such information may be classified as "environmental". Requests may range from a simple inquiry on radiation levels in the neighbourhood of a nuclear power plant to a demand for detailed information on the safety features of a new radioactive waste storage or disposal facility. Generally speaking, any environmental information held by a public authority must be provided when requested by a member of the public unless it falls under an exempt category or if disclosure would adversely affect public security.[17] Access rights are not limited to citizens of the state party; they apply equally to non-citizens and non-residents. The convention also provides that in the event of an imminent threat to human health or the environment, all information held by a public authority which would enable the public to take preventive or mitigation measures against harm from such a threat must be disseminated.[18]

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14. Articles 6 and 13 of the Joint Convention.

15. The public is defined as natural or legal persons, and in accordance with national law or practice, their associations, organisations or groups. These three rights are set out in Articles 4 to 9 of the Aarhus Convention.

16. The Aarhus Convention defines "environmental information" as any information in written, visual, oral, electronic or any other material form on:

    (a) The state of elements of the environment, such as air and atmosphere, water, soil, land, landscape and natural sites, biological diversity and its components, including genetically modified organisms, and the interaction among these elements;

    (b) Factors, such as substances, energy, noise and radiation, and activities or measures, including administrative measures, environmental agreements, policies, legislation, plans and programmes, affecting or likely to affect the elements of the environment within the scope of subparagraph (a) above, and cost-benefit and other economic analyses and assumptions used in environmental decision-making;

    (c) The state of human health and safety, conditions of human life, cultural sites and built structures, inasmuch as they are or may be affected by the state of the elements of the environment or, through these elements, by the factors, activities or measures referred to in subparagraph (b) above.

17. Articles 4(3) and 4(4) of the Aarhus Convention.

18. Article 5 of the Aarhus Convention.

1.3 Public participation in nuclear decision-making

Consultation with the public is considered to be a critical step whenever decisions are taken on nuclear energy projects requiring permits or licences. Public participation helps considerably to build public trust and confidence in the decision-making process which in turn reduces the risk of "decision deadlock" on the basis of "not-in-my-backyard" (NIMBY) syndromes. Participating in nuclear decision making may range from attending public hearings to participating in preliminary studies on nuclear energy projects.[19] The *public* may refer to the general public but also to environmental experts or environmental interest groups.

The Espoo Convention (1991) is the primary international environmental law instrument addressing public participation. Contracting parties must ensure that environmental impact assessments (EIA)[20] are undertaken with public participation before authorising proposed activities that are likely to cause a significant adverse transboundary impact. An EIA is a procedure that ensures that the environmental implications of decisions are taken into account before the decisions are made. The process involves an analysis of the likely effects on the environment of a project, recording those effects in a report, undertaking a public consultation exercise on the report, taking due account of the comments and the report when making the final decision and informing the public about that decision afterwards.[21] They are used increasingly as the primary tool for stakeholder involvement in the nuclear energy field and they have become an essential instrument in preventing undesirable environmental effects that could arise from the implementation of a nuclear project. In principle, an EIA will focus mostly on physical impacts on the environment, but it is also used as a vehicle for identifying and addressing societal concerns such as the safety of nuclear installations. Each contracting party to the Espoo Convention likely to be affected by a proposed project must be notified of it and is entitled to enter into consultations with the party of origin[22] concerning, *inter alia*, the potential adverse transboundary environmental impact of the proposed activity and measures to reduce or eliminate that impact. Members of the public in the areas likely to be affected by the proposed project must also be given the opportunity to participate in relevant EIA procedures that is equivalent to that provided to the public of the party of origin.

The Chernobyl disaster in 1986 left no doubt that nuclear accidents can have a major transboundary impact and it is not surprising, therefore, that the Espoo Convention applies to all major nuclear facilities and activities: nuclear power stations and other nuclear reactors[23] and

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19. For an overview of different forms of public participation in the nuclear field in Canada, see Berger, S., "Environmental Law Developments in Nuclear Energy", *Nuclear Law Bulletin* No. 81, p. 59. For an overview of the various meanings given to "public participation" by national legislatures, see the Topical Report of the Working Group on Radioactive Waste Management in *Proceedings of the Nuclear Inter Jura Congress Brussels, 2007*. For an overview of different forms of public participation in licensing procedures in a few European countries, see Pelzer, N. and Bischof, W., "Comparative Review of Public Participation in Nuclear Licensing Procedures in Certain European Countries", *Nuclear Law Bulletin* No. 19, p. 53.

20. United States: environmental impact statement (EIS).

21. The Espoo Convention provides no guidance on what is meant by "taking due account of the comments of the public", an omission which could lead to conflicts in its future implementation.

22. "Party of origin" means the contracting party or parties to the Espoo Convention under whose jurisdiction a proposed activity is envisaged to take place.

23 Except research installations for the production and conversion of fissionable and fertile materials, whose maximum power does not exceed 1 kilowatt continuous thermal load.

installations solely designed for the production or enrichment of nuclear fuel, for the reprocessing of irradiated nuclear fuel or for the storage, disposal and processing of radioactive waste. The Nuclear Safety Convention as well as the Joint Convention also contain provisions on consultation with respect to the impact of proposed nuclear installations, but their scope is not as wide as that of the Espoo Convention. The former basically applies only to civil nuclear power plants in operation while the latter is restricted to spent fuel management facilities and radioactive waste management facilities.

The obligations of the Espoo Convention also reach much further than those found in specific international nuclear law instruments. The Nuclear Safety Convention does not stipulate that information regarding the safety of nuclear facilities must be made available to the public; the Joint Convention does, but that obligation does not go as far as giving the public the right to participate in the nuclear decision-making process.[24] Both the Nuclear Safety Convention and the Joint Convention contain an obligation to consult, but this only benefits those other contracting parties in the vicinity of a proposed installation insofar as they are likely to be affected by it; consultation with the public is left to the discretion of the affected contracting parties.[25] Also despite their containing an obligation to do an environmental assessment appropriate to the hazard presented by the nuclear facility, neither the Nuclear Safety Convention nor the Joint Convention mentions any public involvement in that assessment.[26]

Moreover, the Joint Convention seems to be less strict than the Espoo Convention as to the point in time when the environmental assessment must be conducted, at least in those countries where the construction of a nuclear facility is subject to a decision from a competent authority. The Joint Convention stipulates that the environmental assessment must be carried out "before construction" of a radioactive waste management facility or spent nuclear fuel management facility.[27] The Espoo Convention requires that such assessment take place "prior to the decision" of the competent public authority permitting the activity to take place.[28] The weaker provisions of the Nuclear Safety Convention and the Joint Convention are indeed surprising if we take into account that they were adopted respectively three and six years *after* the Espoo Convention.

The Aarhus Convention (1998) also contains provisions on public participation in decision making. It grants the public concerned the right to participate in environmental decision making on a wide range of activities including the construction, operation and decommissioning of nuclear power plants, reprocessing facilities, enrichment facilities, radioactive waste storage and final disposal facilities.[29] This right also applies to any change of the operating conditions of the facility, such as the refurbishment of reactors. Unlike the Espoo Convention, the Aarhus Convention does not specifically address transboundary impacts but where a proposed activity could affect a neighbouring country, members of the public in that country may participate in the decision-making process.

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24. Paragraph iv. of the preamble as well as Articles 6(1)(iii) and 13(1)(iii) of the Joint Convention.

25. Article 17 of the Nuclear Safety Convention and Articles 6 and 13 of the Joint Convention.

26. Article 17 of the Nuclear Safety Convention and Articles 6, 8, 13 and 15 of the Joint Convention.

27. Articles 8(i) and 15(i) of the Joint Convention.

28. Articles 1(v) and 2.3 of the Espoo Convention.

29. Under the Aarhus Convention, the "public concerned" means the public affected or likely to be affected by, or having an interest in, the environmental decision making. Non-governmental organisations promoting environmental protection and meeting national law requirements are deemed to have such an interest.

Legislation on public participation in nuclear decision-making tends to focus on the project level. However, in many countries there is now a tendency to get the public involved at an even earlier stage in the decision-making process. This is true, in particular, in the development of new policies, laws and regulations, as illustrated when Greenpeace obtained a High Court ruling against the British government's consultation process regarding its nuclear power policy. A 2003 Energy White Paper issued by the government had noted that before any decision was taken to build more nuclear power stations there would be the fullest public consultation. In 2006, the government decided in a report that "nuclear has a role to play in the future UK generating mix". Greenpeace argued in court that the government had failed to live up to its promise and denied their legitimate expectation that there would be such proper consultation before making its decision to support new nuclear build. The High Court agreed and granted an order quashing the government's decision.[30]

The Kiev Protocol is also a good example of countries' concerns with an "early consultation" procedure. In 2003, the Espoo Convention was supplemented by the Protocol on Strategic Environmental Assessment ("Kiev Protocol" or "SEA Protocol") which will, once it enters into force, require its state parties to evaluate the consequences of their "plans and programmes" that are likely to have significant environmental effects in a broad range of sectors, including nuclear.[31] Strategic environmental assessments (SEA) occur at an earlier stage of the decision-making process than EIA's but the distinction with the latter is not always very clear. The basic idea is that a SEA shall be carried out for plans and programmes which set the framework for future development consent for specific projects subject to EIA's and that may have an impact on the environment. By way of example, a SEA will apply to a national radioactive waste management plan and would probably have to cover all strategies that may impact the environment: reprocessing or not, release *versus* containment, direct disposal or extended storage and transmutation, reversible or final geologic storage etc. An EIA will apply to each specific radioactive waste management project that is launched on the basis of the plan.[32]

Under the Kiev Protocol, parties planning to develop a nuclear programme shall ensure all relevant stakeholders are consulted; that means consulting the public, national, regional and local environmental and health authorities, and other contracting parties likely to be affected by the transboundary impacts of the plan. The Kiev Protocol requires public participation at a very early stage in the decision-making process as this is when all options are still open.[33] Governments must therefore make draft plans or programmes and accompanying strategic environmental assessment reports available to the public in order to give the latter an opportunity to express its views within a reasonable time, take those views duly into account and inform the public of the decision and of the reasons therefor.

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30. For a description of the case, see Salter, I., "The Queen on the application of Greenpeace Ltd. v. Secretary of State of Trade and Industry" in *Proceedings of the Nuclear Inter Jura Congress Brussels, 2007*.

31. According to Article 2.5 of the SEA Protocol, the plans and programmes must be required by legislative, regulatory or administrative provisions and subject to preparation and/or adoption by an authority or prepared by an authority for adoption, through a formal procedure, by a parliament or a government.

32. For a more detailed analysis of the impact of EIAs and SEAs on the nuclear field, see the Topical Report of the Working Group on Radioactive Waste Management in *Proceedings of the Nuclear Inter Jura Congress Brussels, 2007*.

33. See Article 8 of the Kiev Protocol.

1.4 Prevention of environmental damage caused by nuclear incidents

Today, the primary objective of nuclear law is "to provide a legal framework for conducting activities related to nuclear energy and ionizing radiation in a manner which adequately protects individuals, property and the environment".[34] Nuclear law thus aims to prevent the occurrence of damage as a result of nuclear activities. However, as mentioned in the introduction to this article, for a long time states took the position that *nuclear damage* only meant personal injury and property damage. It was not until after the 1986 Chernobyl accident that they agreed to formally extend this narrow definition to cover the harmful effects of ionizing radiation on the environment as well.

The first line of defence against environmental damage is, of course, the prevention of nuclear accidents by continual reinforcement of nuclear safety programmes. The goal of the Nuclear Safety Convention (1994) is to ensure effective defences in nuclear plants against potential radiological hazards so as to protect individuals, society and the environment from the harmful effects of ionizing radiation. The Joint Convention (1997) also aims to ensure effective defences against such hazards during spent fuel and radioactive waste management activities and with the same objectives, both now and in the future. These same objectives also form the basis of the International Atomic Energy Agency's (IAEA) Code of Conduct on the Safety and Security of Radioactive Sources (2004) and of its Code of Conduct on the Safety of Research Reactors (2004).

The second line of defence against environmental damage is effective damage mitigation through continual improvement of emergency response performance. The Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (1986) is intended to facilitate prompt assistance in the event of a nuclear accident or radiological emergency in order to minimise consequences and to protect not only life and property, but also the environment, from the effects of radioactive releases.

Holding nuclear operators liable for the costs of measures to prevent or reduce environmental damage may be considered the third line of defence. In many legal systems the amount of compensation awarded for damage resulting from a tort will be reduced if the claimant has failed to take reasonable measures to avoid or mitigate that damage. It therefore seemed appropriate to the negotiators of the revised and new international nuclear liability conventions that those instruments contain provisions ensuring compensation be paid for the costs of preventive measures such as, for example, costs incurred by a government to remove nuclear substances from a ship that has sunk along its coastline, in order to prevent environmental damage, where the ship owner does not do so itself.

The conventions provide four guiding principles to define the extent to which the costs of preventive measures shall be compensated.[35] First, only measures that aim to prevent significant environmental damage come into play and the competent court will decide whether the damage is significant or not.[36] Secondly, preventive measures must be reasonable, again according to the

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34. Stoiber, C., Baer, A., Pelzer, N. and Tonhauser, W., Handbook on Nuclear Law, IAEA 2003, p. 5.

35. See Article I(1) of the 1997 Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage Article I of the Convention on Supplementary Compensation for Nuclear Damage and Article 1(a) of the 2004 Protocol to Amend the Paris Convention on Third Party Liability in the Field of Nuclear Energy.

36. According to the conventions the competent court is the court of the contracting state in whose territory the nuclear incident occurred.

decision of the competent court, this means that the measures must be appropriate and proportionate having regard to all circumstances, for example the nature and extent of the risk of environmental damage, the extent to which preventive measures are likely to be effective at the time they are taken and relevant scientific and technical expertise. The test of *reasonableness* is designed to discourage speculative claims. The preventive measures must also have been taken after a nuclear incident has occurred or after an event creating a grave and imminent threat of nuclear damage has occurred. The burden of proof that a nuclear incident has occurred or at least that there was an event creating a grave and imminent threat of environmental damage will be on the person seeking compensation for the cost of taking the preventive measures. Thirdly, if the measures preventing environmental damage are taken by private persons, they must have been approved by the competent authorities in the state in which the measures have been taken, if such approval is required under the law of that state. Finally, such measures will only be compensated to the extent determined by the law of the competent national court.[37]

1.5 Compensation of environmental damage caused by nuclear incidents

If the three lines of defence to prevent environmental damage are unsuccessful, then compensation for "nuclear damage" suffered will be the next step. "Nuclear damage" as it relates to the environment is defined under the new and revised international liability and compensation conventions to mean the costs of measures to reinstate an environment that is significantly impaired due to a "nuclear incident" to the extent that they have not already been compensated as "property damage"; for example, the costs of measures to reinstate the fauna after contamination of the beautiful birds in the Bay of Somme, the *Walhalla* of French ornithologists, due to a nuclear incident occurring in Normandy, France, to the extent that such costs have not been compensated as "property damage". It also means loss of income deriving from an economic interest in any use or enjoyment of the environment, incurred as a result of a significant impairment of that environment, and insofar as it has not already been compensated as "property damage".[38] For example, tourists may stay away from a particular holiday resort because the public beach used by the resort is contaminated by radiation. Since the owner of the resort is not the owner of the beach, the fact that the beach is contaminated does not constitute a loss of or damage to the resort owner's property. Yet it will almost certainly result in a loss of income to the resort owner who will be entitled to compensation if it can show a sufficient economic interest in the use or enjoyment of the damaged environment.[39]

In this section the author will primarily focus on the costs of measures to reinstate a significantly impaired environment. But what does this new head of damage exactly mean? It is true that this head of damage reflects the "polluter pays" principle and it is equally true that

37. This means that the extent of compensation for measures to prevent environmental damage is left to the competent court to determine. It does not mean that such compensation is optional.

38. This category of economic loss is sometimes labelled as "pure economic loss" because it is an economic loss incurred by a person which is not related to any property damage suffered by that person.

39. Unlike the 1997 Protocol to amend the Vienna Convention, the 2004 Protocol amending the Paris Convention requires the economic interest in the use or enjoyment of the environment to be "direct". This is intended to ensure that compensation will not be awarded for nuclear damage that is too remote in the chain of causation. The holiday resort owner in the above example will only be compensated if it is demonstrated that there is a geographic proximity between the resort and the environment (the contaminated public beach) and that the business of the hotel depends upon guests being able to use that beach.

measures of reinstatement cost money, thereby allowing for an "amount" of compensation to be calculated. However, as Bowman writes, there is little practical significance in the notion that the polluter must pay unless it can be established precisely for what he must pay and exactly how much it will cost him.[40] Different options exist to reinstate the fauna in the above mentioned example of the contamination of birds in the nature reserve, each of them at a different cost: for example, all birds in the nature reserve could be replaced by new birds of the same type; alternatively, only certain protected species of birds that have been contaminated to such an extent that their survival is in danger could be replaced, while the others would remain in the nature reserve; another option would be to acquire an alternative non-contaminated site with the same types of birds as the ones that have been contaminated.[41]

The nuclear liability conventions do provide some guidance. They define "reinstating the environment" as reinstating or restoring damaged or destroyed components of the environment or introducing, where reasonable, the equivalent of these components in the environment.[42] The conventions fall short of explaining what is meant by "restoring components of the environment" or by "introducing the equivalent of these components in the environment" and leave it up to the competent court to determine it.[43] Perhaps the approach reflected in other legal instruments, such as the EU Environmental Liability Directive or those comprising the civil liability regime for oil pollution might provide help to the competent court in this regard.

The EU Environmental Liability Directive (2004) establishes a framework whereby biodiversity damage, water damage and land damage are prevented and remedied through a system of operator's liability. The directive distinguishes between damage to water or biodiversity and damage to land.[44] Remediation of damage to water or biodiversity is achieved through the restoration of the environment "to its baseline condition", meaning the condition at the time of the damage of the natural resources and services that would have existed had the environmental damage not occurred, estimated on the basis of the best information available. Remediation of land damage means, at the very minimum, that relevant contaminants are removed, controlled, contained or diminished in such a way that the contaminated land, taking into account its current

40. Bowman, M., "The Definition and Valuation of Environmental Harm", in Bowman and Boyle (ed.), *Environmental Damage in International and Comparative Law*, Oxford University Press 2002, p. 1.

41. The following example does not relate to a nuclear incident but illustrates the idea of purchasing an alternative ecosystem. In order to compensate the "loss" of the ecological characteristics on the 180 ha site at Cadarache, the French public authorities obliged the project company of the international ITER project on nuclear fusion to purchase and manage 480 ha of land with similar characteristics elsewhere in France.

42. Article I(g) of the 1997 Convention on Supplementary Compensation for Nuclear Damage, Article 1(viii) of the 2004 Protocol Amending the Paris Convention on Nuclear Third Party Liability and Article I(1)(m) of the 1997 Vienna Convention on Civil Liability for Nuclear Damage.

43. See for example the Explanatory Texts to the 1997 Vienna Convention and the 1997 Convention on Supplementary Compensation; Pelzer, N., "Learning the Hard Way: Did the Lessons Taught by the Chernobyl Nuclear Accident Contribute to Improving Nuclear Law", in *International Nuclear Law in the Post-Chernobyl Period*, Joint NEA-IAEA Report, p. 105; Wagstaff, F., "The Concept of Nuclear Damage under the revised Paris Convention", in Pelzer (ed.) *Internationalisierung des Atomrechts*, Tagungsbericht der AIDN/INLA *Regionaltagung 2004 in Celle*, Baden-Baden 2005, p. 197 et seq.; Soljan, V., "The New Definition of Nuclear Damage in the 1997 Protocol to Amend the 1963 Vienna Convention on Civil Liability for Nuclear Damage", in *Reform of Civil Nuclear Liability, Budapest Symposium 1999*, p. 59 *et seq*.

44. See Annex II to the directive.

use or approved future use at the time of the damage, "no longer poses any significant risk of adversely affecting human health". The approach of the EU Environmental Liability Directive derives from the general attitude of a legislature on how an unimpaired environment should be re-established.

On the other hand, the civil liability regime for oil pollution set forth in the Civil Liability Convention for Oil Pollution Damage (1992) stipulates that compensation for impairment of the environment, other than loss of profit from such impairment, shall be limited to the costs of reasonable measures of reinstatement actually undertaken or to be undertaken.[45] The convention does not explain what is meant by "reinstating" the environment, but the IOPC Funds have, over the years, been involved in the settlement of claims arising out of numerous incidents and have developed certain principles as to the interpretation of that definition.[46] The main principles are reproduced in the IOPC Fund 1992 Claims Manual. It appears from the manual that what is deemed possible under the EU Environmental Liability Directive, at least for damage to water and biodiversity, would not be possible for oil pollution. The manual acknowledges that it is virtually impossible to bring a damaged site back to the same ecological state that would have existed had the oil spill not occurred, and that therefore the aim of any reasonable measures of reinstatement should therefore be to re-establish a biological community in which the organisms characteristic of that community at the time of the incident "are present and are functioning normally".[47]

The new and revised nuclear liability conventions leave it to the competent court to determine to what extent a damaged environment should be reinstated after a nuclear incident. Judges thus have a very important role to play, but they do have some useful guidance. First, the conventions stipulate that the competent court should only hold nuclear operators liable for measures of reinstatement which are reasonable and which have been approved by the competent authorities of the state where the measures are taken.[48] Nuclear operators will only be liable for the costs of measures to reinstate an environment that is significantly impaired, leaving it to the competent court to determine whether the impairment is significant. These guiding principles help define this new head of damage and make it "operable". Judges also have guidance from interpretations emanating from other similar legal instruments. They might choose to adopt either one of the two interpretations provided by the EU Environmental Liability Directive and the oil pollution regime, depending on what component of the environment is being reconsidered, or perhaps they will select some other approach altogether. According to Dr. Soljan, bringing the environment back to its condition prior to the nuclear accident is not an option since "...the desire to restore the environment to its condition prior to the nuclear incident shall be subject to the rule of reason".[49] Time will tell whether the courts agree.

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45. See Article 1 of the International Convention on Civil Liability for Oil Pollution Damage (1992).

46. The IOPC Funds are intergovernmental organizations which provide compensation for oil pollution damage resulting from spills of persistent oil from tankers. For more information, see Jacobsson, M., "The Concept of Pollution Damage in the Maritime Conventions Governing Liability and Compensation for Oil Spills" in *Reform of Civil Nuclear Liability, Budapest Symposium* 1999, p. 37.

47. 1992 International Oil Pollution Compensation Fund Claims Manual, p. 31.

48. See Section 1(4) of this article for the definition of "reasonable".

49. Soljan, V., "The New Definition of Nuclear Damage in the 1997 Protocol to Amend the 1963 Vienna Convention on Civil Liability for Nuclear Damage", in *Reform of Civil Nuclear Liability, Budapest Symposium* 1999, p. 77.

2. Extra-territorial application of environmental law in the nuclear field

Over the last decades there has been a trend in OECD member countries to become more protective of the environment. Legislation has been adopted progressively to avoid and reduce negative impacts of industrial activities on the environment. But the increasing globalization of business and expanding regulation of commerce by states have also led to a significant rise in the application of national laws outside national borders. Driven by the saying that "a nuclear accident anywhere is a nuclear accident everywhere" and hence by a moral obligation to protect the environment wherever those industrial activities are taking place, those countries may be tempted to impose their strict environmental legislation not only on activities related to nuclear facilities on their own territories but also on projects located outside their borders. Nuclear vendors would then be obliged to comply with their own national environmental legislation even where their activities (e.g. construction, servicing, decommissioning) are being carried out abroad.

A myriad of questions relating to two main issues arise in this regard. First, does the application of national laws on foreign territory ("extraterritorial application") per se have negative effects on international trade and investment as the International Chamber of Commerce purports? Is there a high risk that the extraterritorial application of environmental law will subject nuclear vendors to conflicting or overlapping legal requirements, that it will foster unpredictability, increase the risk involved in commercial activities and expose them to overly burdensome litigation in foreign jurisdictions? Will it encourage forum shopping, duplicate legal proceedings and potentially divergent outcomes?[50] Or could extraterritorial application also lead to positive effects, with the environment in customer countries that have less developed environmental legislation benefiting from the application of the stricter regulations of supplying countries, or at least from some minimum environmental standards? Over the past two decades it has often been alleged that nuclear supply and service companies in developed countries conduct their activities in developing host countries in accordance with much lower environmental standards than those adopted in their home countries. But should companies in developed countries not be required to respect their own national environmental legislation in all circumstances, even when operating abroad and regardless of whether there is any financial support from the home country involved? Would compliance with the environmental standards "at home" not ultimately be part of the general duty of care which suppliers of nuclear technology owe to the recipients and to the world at large and which was recently invoked by the Director General of the IAEA, Dr. ElBaradei?[51] Obliging such companies, by law, to comply with the environmental standards of their home countries when carrying out work on nuclear facilities in developing host countries may perhaps ultimately benefit the environment in the host countries. Customer countries may not like the idea of having foreign environmental law applied to activities taking place on their territory from a sovereignty point of view, but they may also consider that it is in their best interest to preserve their national environment.

Secondly, do countries have the right under public international law to apply their environmental legislation abroad? Is a supplier country legally entitled to impose its environmental legislation on nuclear projects located in customer countries? For example, does the parliament of

50. Policy Statement of the International Chamber of Commerce on Extraterritoriality and Business, 13 July 2006, available at: www.iccwbo.org/uploadedFiles/ICC/policy/trade/Statements/103-33%205%20Final.pdf.

51. Speech given by Dr. ElBaradei at the high-level session marking the 50th Anniversary of the OECD Nuclear Energy Agency in Paris, 16 October 2008, available at: www.nea.fr/html/general/50th/Mr._ElBaradei_IAEA.pdf.

Country X have the right to require that an EIA be carried out in accordance with Country X's laws for work to be performed by one of its nuclear supplier companies on nuclear facilities located in Country Y? Is the national assembly of Country A legally entitled to impose its environmental standards relating to radiation emissions on nuclear projects realised by Country A's nuclear vendors in Country B? Does it make any difference whether the government of Country X or Country A is, in some way, financing the nuclear project or otherwise assisting its nuclear supplier companies to carry out their work?

This part of the article deals with the second question. The author does not pretend to give a definite answer but aims at providing *food for thought*. In particular, an examination will be made of the restraints which affect the right of states to apply their environmental protection legislation to nuclear activities in foreign countries. Assuming that national legislatures have the right to do so, an analysis will follow of whether non-compliance with environmental standards can be enforced both nationally and abroad.

It is important to note that the principles of international law governing the legal effect of national legislation outside the geographical territory of the legislature are truly principles, and not rules. A lot of debate is going on between countries on this issue and it is not certain whether agreement can ever be obtained. Legal principles governing jurisdiction have a fundamental importance in international relations. Since they determine both the reach of a state's law and the boundaries of that state's particular public order, it is no surprise that they are also one of the most controversial fields of international law. A lot of doctrine exists, especially in the United States, on whether a legislature implicitly means to make its legislation applicable not only on national territory but also abroad.[52] However, it is not the purpose of this article to get involved in a study of the rules of statutory interpretation.

Section 2.1 which follows, introduces the notion of jurisdiction, the customary international law approach that governs jurisdiction and lists the most relevant grounds to claim jurisdiction. In section 2.2, the author argues that there exists a legal basis under customary international law which may entitle a national legislature to apply environmental legislation to nuclear energy projects abroad.

2.1 Notion of jurisdiction under public international law

The issue of the extraterritorial effect of environmental requirements relating to nuclear projects is intrinsically related to the notion of jurisdiction under international law. The term *jurisdiction* derives from the Latin "juris-dicere" which literally means "stating the law" or "declaring what the law is" in relation to persons or conduct. According to Lowe, "jurisdiction" is the term that describes the limits of the legal competence of a state or other regulatory authority (such as the European Community) to make, apply and enforce rules of conduct upon persons.[53]

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52. Brennan, D.C., "Extraterritorial Application of Federal Wildlife Statutes: a New Rule of Statutory Interpretation", *Cornell International Law Journal*, Vol. 12:143, p.143; Almond, H.H., "The Extraterritorial Reach of United States Regulatory Authority over the Environmental Impacts of its Activities", *Albany Law Review*, Vol. 44, p. 739; "The Extraterritorial Scope of NEPA's Environmental Impact Statement Requirement", *Michigan Law Review*, Vol. 74:349, p. 349; Lewis, B., "Analysing the Extraterritorial Application of the National Environmental Policy Act", *Tilburg Foreign Law Review*, Vol. 8:313, p. 313.

53. Lowe, V., "Jurisdiction", in *International Law*, 2nd edition, Evans, M.D. (ed), July 2006, Oxford.

Jurisdiction is an aspect of sovereignty and usually refers to the power of states to make rules ("legislative or prescriptive jurisdiction"), the power to enforce compliance with the rules ("enforcement jurisdiction") and to subject persons to its courts ("adjudicative jurisdiction"). The first concept, legislative jurisdiction, refers to the jurisdiction to prescribe. It denotes the power of a state under international law to enact laws and regulations and apply them to certain conduct, relations and persons. The second, enforcement jurisdiction, refers to a state's power under international law to enforce or compel compliance or to punish non-compliance with its laws or regulations, whether through courts or by executive, administrative or police order. The last concept, adjudicative jurisdiction, is a state's power to subject persons or conduct to the process of its courts or administrative tribunals. The questions on extraterritoriality which are raised in this article relate to prescriptive and enforcement jurisdiction.

The basic rule under customary international law is that a state is prohibited from exercising jurisdiction as it sees fit unless there is a permissive principle to the contrary.[54] The particularity of this rule is that the state claiming jurisdiction must demonstrate the existence of a specific ground enabling it to exercise that jurisdiction. Therefore, states which oppose another state's extraterritorial jurisdiction will tend to rely on this approach and require the state asserting jurisdiction to demonstrate that there is a permissive principle enabling it to do so.

Several principles are forwarded by states under customary international law to justify legislative and enforcement jurisdiction. They are also often invoked to ground extraterritorial jurisdiction. These principles all start from the idea that there needs to be a clear connecting factor, of a kind whose use is approved by international law, between the state asserting jurisdiction and the conduct that it seeks to regulate.

One of the most widely recognised basis for jurisdiction is the *territoriality principle*. According to this principle, states have the power to adopt and enforce legislation to regulate conduct on their territory. The underlying idea is that a state is free to render its legislation applicable to any person within its national territory, including foreign nationals. Under a strict application of the territoriality principle, every state has the exclusive right to apply its legislation within its national territory but has no authority to legislate outside that territory. National legislation of a foreign state or an agreement between states may constitute an exception to the territoriality principle to the extent that such legislation or agreement allows the legislation of one state to be applicable on the territory of another state.

A second basis for jurisdiction which is firmly established in international law is the *nationality principle*, sometimes denoted as the active personality principle. Under this principle, a state claims the competence to regulate the activities of its nationals, even if they reside abroad. The notion of "national" refers not only to natural persons but also to legal persons such as companies and their subsidiaries. One of the main economic advantages of the nationality principle is that it enables states to apply their tax laws to citizens living and earning their income abroad.

A third basis for jurisdiction is the *protective principle*. This principle enables a state to exercise jurisdiction *vis-à-vis* acts which threaten its essential interests or which are directed

54. Under international law an alternative approach to the question of jurisdiction exists that is based on the judgment of the Permanent Court of International Justice in the 1927 Lotus case. The author does not address this approach because it does not cover extending national standards and rules to activities carried out under jurisdictions other than the one under which the standards and rules were issued. The Lotus case happened on the High Seas where, in general, no national jurisdiction applies.

against its security. Accordingly, when its vital interests are threatened by activities, even if carried out by non-nationals outside its territory, a state may exercise its jurisdiction. Examples of acts that justify jurisdiction grounded on the protective principle are counterfeiting the national currency or high treason.

A final basis for jurisdiction that is worth mentioning in the scope of this article but that is a much contested one and has found less than general acceptance is the *effects principle*. According to this principle, conduct which produces substantial effects in a particular state may be subjected to the jurisdiction of that state even if it concerns conduct by non-nationals or conduct outside the territory of that state.

2.2 Admissibility of extraterritorial jurisdiction in the field of environmental protection

The author will test the right of a national legislature to impose environmental requirements on work performed in connection with nuclear facilities abroad in light of the main principles invoked by countries to claim jurisdiction under customary international law. The analysis will be done on the basis of the example of Country X's national legislature wishing to impose its environmental requirements on the construction, by a Country X nuclear vendor, of a nuclear power plant in country Y.

2.2.1 Extraterritorial legislative jurisdiction

The *territoriality principle* does not seem to be the right tool to claim extraterritorial legislative jurisdiction in this case. It only enables the legislature of Country X to impose environmental standards on nuclear projects that are realised on its territory. Unless there is an agreement with Country Y, it does not grant the legislature of Country X the right to impose environmental standards on nuclear projects that are realised on the territory of Country Y, not even by companies that have the nationality of Country X.

In the author's view, the *effects principle* will not, in principle, justify extraterritorial legislative jurisdiction for environmental matters either. In *Natural Resources Defence Council Inc. v Nuclear Regulatory Commission (NRC)*,[55] the question was whether the decision to issue an export licence for a nuclear reactor to the Philippines triggered the requirement under U.S. environmental law to conduct an EIA when the only significant environmental impacts would be felt in the importing country. The Court of Appeals relied on foreign policy grounds to support its holding that U.S. environmental law did not apply to the export licence. On this basis, the author therefore maintains that the legislature of Country X is not entitled to invoke the effects principle to justify imposing environmental standards on the radiation emissions of a nuclear project in Country Y, not even if it was built by companies that have the nationality of Country X. This does not mean that the effects principle is of absolutely no use for extraterritorial legislative jurisdiction; it might authorise states to assert jurisdiction over the construction of nuclear projects that are located just across their border, arguing that such projects may generate significant environmental impacts that could be incurred on their national territory.

Nor does the author think that environmental protection can be considered a vital state interest so as to justify extraterritorial legislative jurisdiction on the grounds of the *protective principle*. Although the category is not closed, the protective principle seems to be reserved for acts that threaten national security. It would be hard to imagine that the legislature of country X

55. *Natural Resources Defence Council Inc. v Nuclear Regulatory Commission*, 647 F.2d 1345 (D.C.Cir. 1981).

could reasonably invoke the protective principle to justify imposing environmental standards on the quality of the water that is to be ejected by nuclear power plants in country Y, even if they are to be constructed by companies that have the nationality of country X.

The *nationality principle* may lead to a different outcome however. The nationality principle establishes the right of a legislature to attach legal consequences to the conduct of its nationals wherever the conduct occurs, even outside the national territory of the legislature. The principle is mainly invoked in relation to criminal law. Many countries, particularly those with a legal system based upon the civil law model, claim jurisdiction over crimes committed by their nationals, notwithstanding that the offence may have occurred in the territory of another state. Common law countries tend to do so as well, although their claims are often restricted to very serious crimes such as treason and murder.

One example of an initiative to exert extraterritorial legislative jurisdiction in the environmental law field on the basis of the nationality principle is the June 2000 Bill for a Corporate Code of Conduct Act that was introduced in the U.S. House of Representatives.[56] The bill, which was never adopted, requires U.S. nationals, including U.S. based corporations, employing more than twenty persons in a foreign country, either directly or through foreign affiliates, to comply with internationally recognised environmental standards and with U.S. federal environmental laws that would be applicable if the operations were conducted in the U.S. Although the author is not aware of any successful precedent, he believes the nationality principle may constitute a valid ground to justify extraterritorial legislative jurisdiction in the field of environmental protection and hence could enable legislatures to prescribe laws that extend the application of domestic environmental regulations to the foreign operations of nuclear vendors who are nationals of the home country.

However, the nationality principle has its limitations. As noted above, the notion of "national" refers not only to natural persons but also to legal persons such as companies. The nationality of companies is a matter for each state to determine under its own laws but there is no single test of nationality. Common law states tend to accord nationality to companies on the basis of their incorporation in the territory of the state, regardless of where the actual business or management of the company is carried out ("incorporation theory"). Most civil law states, on the contrary, prefer to grant nationality on the basis of the place where the company has its management seat regardless of where the company is incorporated ("real seat theory").

The nationality principle allows legislatures to regulate the activities of companies that have its nationality. If a nuclear facility is constructed by a company that has the nationality of the state that plans to exercise jurisdiction, the nationality principle will enable the legislature of that state to apply its environmental legislation to that nuclear activity. However, if the nuclear facility is constructed by a foreign subsidiary of that company with the subsidiary having a distinct legal personality, the nationality principle may not serve its purpose, at least not in countries adhering to the incorporation theory. If the subsidiary is incorporated in the foreign country and its nationality is determined on the basis of its place of incorporation, it will not be regarded as a national of the home country of the parent. In such cases, the nationality principle would not enable the parent company's home country to exercise extraterritorial legislative jurisdiction over the nuclear activities conducted by the foreign subsidiary.

56. Corporate Code of Conduct Act, H.R. 4596, 106th Cong., 2000.

2.2.2 Extraterritorial enforcement jurisdiction

Even if the nationality principle may enable legislatures to grant extra-territorial effect to their environmental legislation, international law does not allow states to enforce that legislation in another state.

In contrast to the principles governing legislative jurisdiction, international law governing the exercise of enforcement jurisdiction is clear and simple. A state cannot take measures on the territory of another state by way of enforcement of its national laws without the consent of the latter. Persons may not be arrested, fines may not be enforced, tax investigations may not be mounted and orders for production of documents may not be executed on the territory of another state, except under the terms of a treaty or other consent given. It is this principle that dictates, for example, that British authorities have no right to enter Russian territory and arrest suspects in the recent polonium intoxication case involving the death of a former agent of the Russian Federation's Federal Security Office, Alexander Litvinenko. The United Kingdom's enforcement jurisdiction, like that of every other state, is in principle limited to its own territory. This is why states need to seek the extradition of persons accused of committing crimes within their jurisdiction in a case where the accused is living in another state.

Therefore, if the company that has the nationality of Country X constructs a nuclear power plant in Country Y and does not comply with the environmental requirements imposed by the legislation of Country X, public authorities of Country X cannot enforce compliance in Country Y unless there is a bilateral or multilateral agreement to that effect with the latter.[57] However, even where there is such an agreement, regular enforcement is crucial to detect, and prevent further, evasion of environmental legislation. Since environmental laws are generally enforced through the administrative process, the effectiveness of environmental law enforcement can be gauged by the strength and integrity of the administrative law regime. In this respect, many of the developing host countries may lack the institutional and legal frameworks in their administrative branches that are needed to enforce the environmental regulations of the home country of the nuclear vendor.

2.2.3 A possible alternative solution

Considering this legal limitation as well as the political tensions that may be caused between the host country and the supplying country resulting from interference with the sovereignty of the former, the author wonders whether it would not be more appropriate to search for a legal basis other than the *nationality principle* to oblige companies in developed countries to respect the own national environmental legislation when carrying out nuclear activities abroad. A possible solution to make the foreign activities of nuclear vendors subject to strict environmental standards is to oblige them to meet such standards on a contractual basis rather than through the extraterritorial application of the environmental legislation of the home country of the nuclear vendor, as illustrated by the 2003 recommendation on export credits of the Organisation for Economic Co-operation and Development (OECD).[58]

57. However, the authorities of Country X may have jurisdiction to impose a fine on the company in Country X.

58. OECD Council Recommendation on Common Approaches on Environment and Officially Supported Export Credits [C(2003)236, as amended by the OECD Council in C(2004)213 and TAD/ECG(2007)9].

Contracts for export credits serve as the legal instrument in the OECD recommendation to ensure respect for environmental standards. The recommendation urges export credit agencies in OECD member countries to evaluate the environmental impact of projects prior to taking decisions on officially supported export credits.[59] When undertaking environmental reviews, the projects must be benchmarked against the environmental standards of the host country as well as those of the World Bank Group or Regional Development Banks.[60] The projects must comply with host country standards but must also meet the relevant international standards where these are more stringent than host country ones.[61] If a project potentially has significant adverse environmental impacts, an EIA must be carried out giving the public at least 30 calendar days to be informed about its environmental impact prior to a final commitment to grant official support.

New and major expansion projects in nuclear power stations and other nuclear reactors, including the dismantling or decommissioning of such power stations or reactors[62] as well as in installations designed for the production, or enrichment of nuclear fuels, the reprocessing, storage or final disposal of irradiated nuclear fuels, or for the storage, disposal or processing of radioactive waste are mentioned as illustrations of projects that require an EIA.[63]

On the basis of the environmental review, OECD member countries and their export credit agencies may decide to decline official support, to provide such support without conditions or to provide such support subject to prevention and/or mitigation measures and monitoring requirements. Although the OECD recommendation is not legally binding on OECD member countries and only applies to projects that benefit from officially supported export credits and in essence only focuses on environmental reviews and EIAs, it certainly is a valuable first step to make internationally recognised environmental standards applicable on nuclear projects in foreign countries.

3. Conclusion

The focus of nuclear law has traditionally been on the protection of people and property. Public awareness of the harmful effects of certain industrial activities and the Chernobyl accident have led to a growing tendency for environmental regulation to cover the nuclear field as well. Environmental law entered the nuclear field both *directly* by making nuclear activities subject to international environmental law, and *indirectly* by introducing the concept of environmental protection in international nuclear law. Recent international law developments in public access to nuclear information, public participation in nuclear decision-making and prevention of and

59. Export credit agencies can be government institutions or private companies operating on behalf of government.

60. The OECD Council Recommendation mentions the ten World Bank Safeguard Policies, or where appropriate, all eight International Finance Corporation Performance Standards, or the relevant aspects of the standards of the Regional Development Banks, or the relevant internationally recognised standards, such as European Community standards, that are more stringent than those standards referenced above (see Article 12 of the 2007 edition).

61. Article 13 of the OECD Council Recommendation foresees that in exceptional circumstances a project that does not meet the international standards against which it has been benchmarked may be supported.

62. Except research installations for the production and conversion of fissionable and fertile materials, whose maximum power does not exceed 1 kilowatt continuous thermal load.

63. See the illustrative list in Annex 1 to the OECD Recommendation.

compensation for environmental damage caused by nuclear incidents are proof that environmental law is indeed in evidence in the nuclear field and that its significance is increasing steadily. Bearing in mind the words of the French writer Victor Hugo that "progress is nothing more than a friendly revolution", it is important that nuclear law experts and nuclear energy experts help guide the further development of environmental law and its impact upon nuclear activities in order to encourage its growing symbiosis with nuclear law.

In connection with that growing symbiosis, it is logical to examine the value of ensuring that the most beneficial environmental law requirements are applied to nuclear projects, wherever they are undertaken. This of course raises the issue of whether public international law permits national legislatures to impose their own environmental law requirements on activities undertaken in connection with nuclear projects abroad, which in turn requires an examination of the principles governing extraterritorial jurisdiction. In the author's view, the nationality principle may well provide a legal basis under customary international law entitling a national legislature to apply its environmental legislation to activities undertaken in connection with nuclear facilities in foreign countries by companies that have that legislature's nationality. However, the importance or usefulness of that application will undoubtedly be severely limited by the concept of nationality as applied to legal persons as well as by the inability of that same state to enforce its legislation in a foreign country without the latter's agreement thereto.

Case Law

Canada

Brunswick News Inc. v Her Majesty the Queen in the Right of the Province of New Brunswick denying release of nuclear power feasibility study[1] (2008)

A superior court in Canada has made an important decision with regard to freedom of information legislation and protection of confidential commercial information. It denied a provincial newspaper company access to a feasibility study concerning the construction of a second nuclear power reactor in New Brunswick, Canada *[Brunswick News Inc. (c.o.b. New Brunswick Telegraph Journal) v New Brunswick (Minister of Energy)]*.[2]

Background

On 7 February 2008, Brunswick News Inc. applied to the New Brunswick Minister of Energy under the provincial Right to Information Act[3] for copies of two feasibility studies concerning the construction of a second nuclear power reactor at Point Lepreau, New Brunswick. On 21 February 2008, the Minister provided the newspaper with a copy of one study but refused access to the other study in its entirety. The latter study had been prepared by Team CANDU, a group of energy corporations including Atomic Energy of Canada Ltd. (AECL).[4]

At the time of the application, the Province of New Brunswick had not yet made a decision with respect to the construction of a second reactor by Team CANDU. The studies were prepared to provide advice and assistance to the Government of New Brunswick in its decision-making regarding new nuclear power.

The Minister's decision not to release the Team CANDU study in its entirety pursuant to the act was based on three provisions which stipulate that there is no right to information where:

(a) release of information "would cause financial loss or gain to a person or department, or would jeopardize negotiations leading to an agreement or contract" [paragraph 6(c) of the act];

(b) release "would reveal financial, commercial, technical or scientific information ... given in or pursuant to an agreement entered into under the authority of a statute or regulation, if the

1. Submitted by Jacques Lavoie, Senior General Counsel and Lisa Thiele, Senior Counsel, both at 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 policies of the Canadian Nuclear Safety Commission or of the Government of Canada.

2. 2008 NBQB 299, [2008] N.B.J. No. 329 [Atomic Energy of Canada Limited, (AECL) Intervenor].

3. S.N.B. 1978, c. R-103 (hereinafter "act").

4. Team CANDU was described by affidavit evidence before the court as "the nuclear technology and engineering companies that have joined together to provide a nuclear energy proposal to meet the province's electricity needs", and its members included Atomic Energy of Canada Ltd. (AECL), SNC-Lavalin Nuclear Limited (SLN), Hitachi Canada Ltd. (HCL), GE-Hitachi and Babcock and Wilcox (B&W).

information relates to the internal management or operations of a corporation that is a going concern" [subparagraph 6(c.1)(ii) of the act]; or

(c) release "would disclose opinions or recommendations for a Minister or the Executive Council" within the meaning of paragraph 6(g) of the act.

The decision of the court

When the newspaper company applied for a review of the Minister's decision before the New Brunswick Court of Queen's Bench, AECL sought and was granted status to intervene in the application in order to represent the interests of the members of Team CANDU. Before the court, in addition to the reasons that had been relied on by the Minister in denying release of the study, AECL raised another ground on which to argue that the feasibility study was not subject to disclosure under the legislation, the specific provision of the act providing that there is no right to information where its release "would disclose information the confidentiality of which is protected by law".

AECL submitted affidavit evidence on 18 August 2008 advocating in favour of applying the act's legally protected confidentiality provision [paragraph 6(a)]: "The release of the Study would result in the disclosure of information, the confidentiality of which is protected by law through confidentiality and non-disclosure agreements. These agreements were necessary for the formation of Team CANDU and the sharing of confidential information between Team CANDU members".

Also of note to the court was the fact that a memorandum of agreement (MOA) had been executed between AECL and the Energy Minister pursuant to the provincial Executive Council Act.[5] Such legal instruments are often used in Canada in the context of intergovernmental relations by federal, provincial and territorial governments and government bodies such as Crown corporations, such as AECL. With regard to the feasibility study in this case, the MOA specified that any information shared would be treated confidentially.

Justice G.S. Rideout reviewed the jurisprudence regarding confidentiality and noted that the test in Canada for a privilege against disclosure of confidential communications is a four-part test:

1) The communications must originate in a *confidence* that they will not be disclosed.

2) This element of *confidentiality* must be essential to the full and satisfactory maintenance of the relation between the parties.

3) The *relation* must be one which in the opinion of the community ought to be sedulously fostered.

4) The *injury* that would inure to the relation by the disclosure of the communications must be *greater than the benefit* thereby gained for the correct disposal of litigation.

In concluding that the Team CANDU feasibility study in its entirety was not subject to release on the basis of the confidentiality provision, the court was satisfied that "the communication originated in a confidence that it would not be disclosed" and that it had been the intention of the parties that both the report was to be confidential and that its confidentiality was to continue. The court stated:

"Given that we are dealing with a group of parties who exchanged their knowledge and sensitive information amongst themselves, it seems clear that the parties would require this

5. R.S.N.B. 1952, c. E-12.

information to be confidential... If that was not in place, it seems obvious that the parties would be reluctant to disclose their knowledge and information to the rest of the team. In addition, the nature of the work requires a free exchange of information in order to properly prepare the feasibility study".

The court came to an interesting conclusion based on the latter two parts of the test for confidentiality. It asks whether or not the relation should be "sedulously fostered" in the community and also if the potential injury as a result of disclosure outweighs the benefits of disclosure. In the circumstances of this matter, the court noted that "disclosure, not secrecy is the policy and foundation to the legislation". In finding that the study was not to be released, the court concluded:

> "In my opinion, the community would want parties who are preparing a feasibility study to have the benefit of a free exchange of the information that each party could bring to the table. The feasibility study will be addressing government on very serious and expensive matters, therefore, the community would want the most forthright opinions based on all the facts, information, discoveries and trade secrets that each party may have. If the parties were reluctant to produce this information because it may be disclosed, with adverse results to the party, this could result in a detriment to the community. Consequently, while slightly different in the context of this case, I believe tests three and four have been met".

The court was satisfied that the confidentiality of the feasibility study was legally protected, such that the study in its entirety was not subject to disclosure. On the other grounds that had been relied upon by the Minister for non-release, the court found that those provisions did not protect the feasibility study from release in its entirety.

Conclusion

This case should be of interest to the legal community as it could assist parties involved in such agreements in gaining a better understanding of the reach of freedom of information laws and the extent to which protection against disclosure may be afforded under similar circumstances or agreements in some Canadian jurisdictions.

It is also worth noting that a new provision was added to the federal Access to Information Act[6] (ATIA) to provide a general exclusion from the provisions of the legislation with respect to records containing information that is under the control of AECL. Section 68.2 of the ATIA states:

This act does not apply to any information that is under the control of Atomic Energy of Canada Limited other than information that relates to

(a) its general administration; or

(b) its operation of any nuclear facility within the meaning of section 2 of the *Nuclear Safety and Control Act* that is subject to regulation by the Canadian Nuclear Safety Commission established under section 8 of that act.

The Canadian Parliament has expressed an intention to exclude records from the ATIA such as the ones which were considered in the New Brunswick case. At this time, however, it may still be too early to conclude with certainty the extent to which such a provision may be interpreted by Canadian courts in the future.

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6. R.S. 1985, c. A-1, as amended by 2006, c.9, s.159 (hereinafter "ATIA").

Germany

Judgement of the Federal Administration Court on the so-called "Biblis-obligations" (2008)

In a judgment handed down on 2 July 2008, the German Federal Administrative Court declared an order by the state Baden-Württemberg against the operator of the nuclear power plant Philippsburg to be unlawful, upholding only one obligation in the order.[7]

In 2005, the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) instructed the regulatory and supervisory body of the federal state Baden-Württemberg to issue a order, which required the operator to shut its plant, without delay or further orders, in case of not "obviously insignificant" non-compliance with technical limits, measures or other specific safety-related requirements deemed to control incidents. The operator was further required to inform the regulatory and supervisory body immediately if it was no longer able to demonstrate the controllability of design basis accidents.

The operator of the nuclear power plant Biblis had received the first order of this kind and challenged it in a trial which is pending in a lower court. According to the Federal Administrative Court, the BMU intends to have similar orders issued to all nuclear power plant operators in Germany.

In the judgement of the Federal Administrative Court, the instruction to stop operation is too ambiguous since it does not specify what technical criteria should compel operators to shut their reactors. The court ruled that, in compliance with the *principle that administrative decisions must be precise, clear and unambiguous,* an order to terminate operations must clearly state when and for what reasons an operator has this duty. A global obligation to immediately cease operation irrespective of the gravity of the non-compliance also violates, according to the court, the *principle to take proportionate decisions*.

The court dismissed the case with respect to the operator's obligation to inform the regulatory authority when it has any doubt concerning the controllability of design basis accidents. The judges deemed this requirement to be "clear" enough.

United States

Judgement of the U.S. Court of Federal Claims on the interpretation of the U.S. Department of Energy's Standard Contract (2008)

In the Court of Federal Claims, plaintiffs Carolina Power & Light Company and Florida Power Corporation (collectively Progress Energy) claimed damages of USD 91 029 704 from defendant U.S. Department of Energy (DOE), under the terms of DOE's Standard Contract for Disposal of Spent Nuclear Fuel and/or High Level Waste (Standard Contract).[8] DOE's liability was previously established and the amount of damages was the sole issue in this case.

On 19 May 2008, the court issued an order and opinion awarding plaintiffs approximately USD 83 million of the USD 91 million plaintiffs had sought for mitigation damages for costs incurred from 31 January 1998 through 31 December 2005 due to the Government's delay in disposal of their spent

7. BVerwG 7 C 38.07; BVerwG Press Release No. 42/2008.

8. *Carolina Power & Light Co. v U.S.*, 82 Fed. Cl. 23, 26 (Ct. Cl. 2008).

nuclear fuel. The court made determinations on damages awards consistent with prior Federal Claims Courts rulings by finding that DOE would accept spent nuclear fuel at a rate of 3 000 MTUs a year and that claims for costs of capital are not recoverable. DOE has appealed.

As background, the Nuclear Waste Policy Act of 1982 (NWPA) requires the Secretary of Energy to "enter into contracts with any person who generates or holds title to high-level radioactive waste or spent nuclear fuel of domestic origin for the acceptance of title, subsequent transportation, and disposal of such waste or spent nuclear fuel".[9] The NWPA provided that, in return for payment of fees, the Secretary of Energy would begin disposal not later than 31 January 1998. Thus, DOE issued the Standard Contract as a final rule on 18 April 1983.[10] DOE then entered into contracts with the utilities in which, in return for payment of fees into the Nuclear Waste Fund, the Department agreed to begin disposal of spent nuclear fuel by 31 January 1998. Because it had no repository to receive the spent nuclear fuel under the NWPA, DOE was unable to commence disposal by 1998 and litigation ensued as a result of the delay. The "spent fuel litigation" established that DOE's obligation to begin disposal is legally binding notwithstanding the lack of a facility, *Indiana Michigan Power Co. v Department of Energy*, 88 F.3d 1272 (D.C. Cir. 1996); that the utilities' remedies for DOE's failure to begin disposal of their spent nuclear fuel are to be determined as a matter of contract law, *Northern States Power Co. v U.S.*, 128 F.3d 754 (D.C. Cir. 1997), *cert.* denied, 119 S. Ct. 540 (1998); and that DOE cannot deny liability on the ground that its delay was unavoidable.

The court noted that in order to obtain renewal of their operating licences, nuclear power plant owners and operators were required to enter into the standard contract with DOE.[11] Both Progress Energy and DOE understood the standard contract to ensure that Progress Energy would not have to provide additional storage space for spent nuclear fuel at their facilities after 31 January 1998.[12] DOE did not comply with the intended time frame and has not yet collected any spent nuclear fuel.[13] Nonetheless, DOE collected fees from utilities pursuant to the contract. As of 31 December 2005, Progress Energy had paid DOE approximately USD 661 million in fees for the disposal of spent nuclear fuel under Plaintiffs' Standard Contracts.[14] Progress Energy has had to take various mitigation measures in order to store its spent nuclear fuel to maintain full core reserve at each of its plants.[15]

The court found that, given the parties' expectations at the time of contract formation, Progress Energy was justified in believing it would not have to build any additional storage for spent nuclear fuel onsite after 31 January 1998.[16] It also held that the damages awarded were reasonably foreseeable to DOE at the time of the contracting, that DOE's breach was a substantial factor causing the damages, and that the damages it awarded were established with reasonably certainty.[17] Progress Energy's claimed damages fall into five categories:

> (1) USD 208 120 to complete a study for a dry storage facility known as an Independent Spent Fuel Storage Installation (ISFSI) at the Brunswick plant; (2) USD 32 734 951 to activate two

9. 42 U.S.C. § 10222(a)(1).
10. Standard Contract for Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste, 48 Fed. Reg. 16590 (18 April 1983).
11. Carolina Power & Light Co., 82 Fed. Cl. at 29.
12. *Ibid* at 30.
13. *Ibid* at 32-33.
14. *Ibid* at 30.
15. *Ibid* at 33-34.
16. *Ibid* at 40-41.
17. *Ibid* at 41-44.

> additional spent fuel storage pools at the Harris plant; (3) USD 16 975 182 to ship spent fuel from the Robinson and Brunswick plants to the Harris plant; (4) USD 36 436 059 to construct and load the Robinson plant ISFSI; and (5) USD 4 675 392 to design, construct and replace spent fuel racks at the Crystal River Plant.[18]

The court disallowed the Crystal River re-rack project and the Harris component cooling water system upgrade. It concluded that plaintiffs would have incurred these expenses even in the absence of DOE's partial breach of the standard contract. It also disallowed various manual journal entries because Progress Energy did not meet its burden of showing the reason for the expenses, or whether the expenses were caused by DOE's partial breach. The court also disallowed Progress Energy's claim for Allowance for Funds Used During Construction (AFUDC), because it is actually a claim for interest against the U.S. Government. This claim is not allowable by law.[19] After deduction of the above items, the court allowed Progress Energy a recovery of USD 82 845 926.[20]

Subsequently, DOE filed a motion for reconsideration, on which the court ruled on 19 June 2008.[21] It its motion, DOE contended that the court erred in three matters:

> (1) the court failed to consider evidence showing that, even if [DOE] had collected spent nuclear fuel as its contract required, Plaintiffs still would have incurred USD 260 037 in railroad track maintenance costs to ship some of its spent fuel by rail between nuclear plants; (2) the court failed to credit Defendant for USD 42 295 in avoided overhead costs; and (3) the court failed to deduct USD 14 102 in construction interest components known as "AFUDC" from plaintiff's claims for crud and sludge cleanup.[22]

The court denied DOE's first two claims and granted the third, reducing Progress Energy's award by USD 14 342. Final judgment for Progress Energy was in the amount of USD 82 789 289.[23]

Summary Order of the U.S. Court of Appeals on petitions for revision of Nuclear Regulatory Commission regulations (2008)

On appeal to the Federal Court of Appeals for the Second Circuit, the joint petitioners objected to the Nuclear Regulatory Commission's (NRC) denial of their petitions for revision of the NRC's nuclear power plant licensing regulations so that a licence renewal "would be subject to the same standards imposed on initial applications for a license".[24] Petitioners challenged the denial of their petitions on the following grounds:

> (1) the NRC, in violation of its own regulations, did not provide petitioners with an opportunity to supplement their petitions; (2) the NRC did not hold a hearing or conduct fact-finding; (3) the NRC improperly relied on the existence of other administrative remedies; and (4) the NRC did not consider the "new information" and "new issues" raised in the petitions.[25]

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18. *Ibid* at 26.
19. *Ibid* at 27.
20. *Ibid.*
21. *Carolina Power & Light v U.S.*, 82 Fed. Cl. 317 (Ct. Cl. 2008).
22. *Ibid.*
23. *Ibid* at 318.
24. *Spano v NRC*, No. 07-0324-ag(L), 07-1276-ag, slip op. at 1 (2d Cir. 19 September 2008).
25. *Ibid.*

As to the first objection, the petitioners argued that the NRC should have notified them of its determination that petitioners failed to provide a factual or technical basis sufficient to support a petition for rulemaking. The petitioners cited 10 C.F.R. § 2.802(f) in support of their argument. This provision states that if a petition for rulemaking is found to be incomplete, the petitioner will be notified and given the opportunity to submit additional information. The court found petitioners' argument unavailing, noting the distinction between an incomplete petition for rulemaking as discussed in 10 C.F.R. § 2.802(f) and one that is merely unpersuasive.

As to the second objection, the petitioners objected to the NRC's omission of an adjudicatory hearing or fact-finding. The Commission's regulation at 10 C.F.R. § 2.803 provides that "[n]o hearing will be held on [a] petition [for rulemaking] unless the Commission deems it advisable". The court held that the NRC's decision not to conduct fact-finding or a hearing was reasonable.

As to the third objection, petitioners challenged the NRC's conclusion that the petitioners' concerns relating to specific plants did not justify a revision of NRC policy for all nuclear power plants. Instead, the NRC suggested that the petitioners use other administrative mechanisms to address their concerns about specific plants. The court held that the NRC's determination was reasonable.

Finally, as to the fourth objection, the petitioners argued that the NRC did not consider new issues and information set forth in their petitions. The petitioners identified the following information in support of their petitions for rulemaking:

> (1) the mishaps at Three Mile Island, Chernobyl, and Browns Ferry; (2) utility bankruptcies; (3) delays in the construction of the nuclear waste repository at Yucca Mountain and the corresponding problem of storing nuclear waste on-site; (4) the reactor-head problems at the Davis-Besse reactor; (5) the terrorist attacks of 11 September 2001; (6) demographic changes bringing population centres closer to power plants; (7) the complexities of evacuating communities surrounding nuclear power plants; (8) the forty-year "design life" of nuclear power plants; (9) the necessity of complying with state regulations; (10) growing public opposition to the existence of nuclear power plants; and (11) studies raising concerns about the health consequences of the low-level radiation emitted by nuclear power plants.[26]

The NRC concluded that the issues petitioners raised are most effectively addressed using the NRC's on-going regulatory process. It found that "[i]n some cases, safety or security might be endangered if resolution of a safety or security matter were postponed until the final renewal decision".[27]

The court, noting the narrow scope of its review, found reasonable the NRC's decision to address these concerns during its on-going regulatory process.[28]

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26. *Ibid.*

27. Andrew J. Spano and Joseph C. Scarpelli; Denials of Petition for Rulemaking, 71 Fed. Reg. 74848, 74851 (13 December 2006).

28. Spano, No. 07-0324-ag(L), 07-1276-ag, slip op. at 3.

National Legislative and Regulatory Activities

Belarus

General Legislation

Act on the Use of Atomic Energy (2008)

The act is reproduced under texts following this chapter together with the Decree on steps to be taken for the construction of a nuclear power plant (see Nuclear Law Bulletin No. 81) and the Regulation on the Department for Nuclear Safety and Radiation Protection of the Ministry for Emergency Situations of the Republic of Belarus (see Nuclear Law Bulletin No. 81).

The Act on the Use of Atomic Energy of 30 July 2008 establishes a comprehensive legal framework governing the siting, planning, construction, commissioning, operation, life extension and decommissioning of nuclear installations and storage facilities. Included in this framework are requirements relating to physical protection, emergency preparedness and emergency response, liability for nuclear damage, responsibilities of operators, rights of workers and the management of nuclear materials, spent nuclear fuel and/or operational radioactive wastes.

Article 3 of the act stipulates that activities involving the use of atomic energy shall be based on the following principles:

- Protection of the life and health of present and future generations and protection of the environment from such activities.
- Ensuring that the benefit to citizens and the public outweighs the damage that may be caused by such activities.
- Ensuring nuclear safety and radiation protection.
- Compensating damage caused by ionizing radiation or by such activities.
- Providing complete, reliable and timely information, unless such information contains state secrets and is classified as restricted information.
- Prohibition of the production of nuclear weapons and other nuclear explosive devices.

The act assigns responsibilities to the Ministry of Energy, the Ministry for Emergency Situations, Republic-level state control agencies and other state organisations. It is notably the Ministry for Emergency Situations which shall ensure nuclear safety, radiation protection, physical protection, management of spent nuclear fuel and radioactive waste [Article 7(2)].

Chapter 9 of the act deals with liability for damage caused by a radiation accident, providing that damage caused to organisations and individuals shall be subject to compensation by the operator (Article 35). Environmental damage is also introduced as a compensable head of damage according to Article 37 of the act. The President shall set a liability limit which may not be lower than the minimum level established in international agreements entered into by the Republic of Belarus,[1] and the operator must, according to Article 36(3), financially secure its liability.

A further achievement of the act concerns provisions on transparency and public participation. Individuals, public associations and other organisations shall have a right to request and obtain from state agencies and organisations information on the safety of nuclear installations and/or storage facilities, with the exception of information that is a state secret or disclosure of which is restricted. Information on a radiation accident must not be categorised as either of these exceptions (Article 39). The right of individuals and organisations to participate in decision making is provided for in Article 40 of the act.

The act stipulates that the provisions of international agreements entered into by Belarus shall prevail should they be in conflict with the provisions of this act (Article 42).

France

General legislation

Radioactive waste management

Safety guideline on final disposal of radioactive waste in a deep geological repository (2008)

This guideline, drafted by the Nuclear Safety Authority (Autorité de Sûreté Nucléaire – ASN) aims to define the objectives of radioactive waste disposal in a deep geological repository, including both site investigation and facility conception phases, in order to ensure safety after closure of the storage facility.

In particular it addresses the following aspects:

- Human health and protection of the environment.
- Principles of safety and the safety-related foundations of the storage facility construction.
- Method to demonstrate the safety of the storage.

The guideline repeals and replaces the fundamental safety rule (Règle fondamentale de sûreté – RFS, III.2.f) published in 1991, which was instrumental in the examination of the applications submitted in 2005 by the National Radioactive Waste Management Agency (Agence nationale pour la gestion des déchets radioactifs – ANDRA) concerning the feasibility of geological disposal.

1. Belarus is party to the 1963 Vienna Convention on Civil Liability for Nuclear Damage and the 1997 Protocol to Amend the 1963 Vienna Convention on Civil Liability for Nuclear Damage. According to Article 7(1)(a) of the revised Vienna Convention the liability of the operator may be limited to not less than SDR 300 million.

Decree concerning the procedures applicable to foreign spent nuclear fuel and radioactive waste reprocessing (2008)

Decree No. 2008-209 was issued on 3 March 2008 in application of the Planning Act Concerning the Sustainable Management of Radioactive Materials and Waste, adopted on 28 June 2006 (see *Nuclear Law Bulletin* No. 77).

It provides that any person wishing to introduce spent nuclear fuel or radioactive waste on the national territory for reprocessing purposes shall submit an application to the Minister of Energy. The licence to carry out these activities necessitates an intergovernmental agreement.

The decree also contains provisions concerning:

- The establishment of a waste repartition system.
- A tracking system for spent nuclear fuel and radioactive waste.
- The annual report to be submitted by the operators of reprocessing and research facilities to the Minister of Energy.

Germany

Radiological protection (including nuclear emergency planning)

Amendment to the 1986 Act on Preventive Protection of the Public Against Radiation (2008)

The 1986 Act on Preventive Protection of the Public against Radiation (see *Nuclear Law Bulletin* Nos. 39 and 79) was recently amended,[2] with new provisions mainly covering the following issues:

- A new Section 10 of the act takes into account the decision of the Federal Constitutional Court of 2 March 1999 which requires that general administrative rules regulating the implementation of the act by the *Länder* (states of the federation) on behalf of the federal state may only be issued by the federal government as a whole and not by an individual minister and need the approval of the *Bundesrat* (Upper House).
- The provisions on administrative competences in Section 11 were redrafted and competence ordinances based on the old version of Section 11 were repealed.
- Section 13 establishes penal sanctions for the violation of certain directly applicable EU Ordinances.[3]

2. By Act to Amend the Preventive Radiation Protection Act of 8 April 2008 (*Bundesgesetzblatt* 2008 I p. 686).

3. Namely: Ordinance (Euratom) No. 3954/87 of the Council as amended, Ordinance (EEC) No. 2219/89 of the Council and Ordinance (EEC) No. 737/90 of the Council as amended.

Transport of radioactive material

Order on the International Carriage of Dangerous Goods by Rail (2008)

Based on the 13th RID Ordinance of 17 October 2006 (see *Nuclear Law Bulletin* No. 79), the Federal Minister for Transport, Building and Urban Affairs published a consolidated version of the Order of the International Carriage of Dangerous Goods by Rail (RID) on 16 May 2008.[4] The text comprises the RID-versions from 1993 to 2006 and is applicable as of 1 January 2007.

Third party liability

Act on the 2004 Protocols to Amend the Paris Convention and the Brussels Supplementary Convention; Act to Amend the Atomic Energy Act (2008)

On 29 August 2008, Parliament agreed to the Protocols of 12 February 2004 to Amend the Paris Convention and the Brussels Supplementary Convention on Nuclear Third Party Liability, thus authorising the ratification of the protocols.[5] Germany will deposit its instruments of ratification together with the other signatories to the protocols that are EU member states.[6]

On that same date, Parliament also passed an Act to Amend the Nuclear Liability Provisions of the Atomic Energy Act and to Amend Other Provisions.[7] This act implements the provisions of the 2004 Revision Protocols by amending the Atomic Energy Act (see *Nuclear Law Bulletin* No. 70).

The protocols will not entail a change in the basic concepts of the nuclear liability provisions currently in force in Germany; in particular unlimited liability of the operator and the maximum amount of coverage of EUR 2.5 billion will be maintained. The same is true for Germany's applying the principle of reciprocity *vis-à-vis* other states. The geographical scope of application of the revised Paris Convention will, based on Article 2(b), be further extended to states that have in force nuclear liability legislation based on principles identical with those of the Paris Convention. The operator will, in accordance with a German reservation, still be held liable in cases covered by Article 9 of the revised Paris Convention ("damage caused by a nuclear incident directly due to an act of armed conflict, hostilities, civil war, or insurrection").

The amendment introduces new definitions, including the broadened concept of nuclear damage as foreseen in the 2004 Paris Revision Protocol. It adopts the new minimum amounts of financial security for minor risk nuclear installations and for the carriage of nuclear substances. The single exclusively competent court to be established in accordance with Article 13(h) of the Paris Convention shall be the higher district court (*"Landgericht"*) of the district where the nuclear incident occurred or, in the cases of Article 13(c) of the convention, where the operator liable has its principal place of business. The higher district court of Hamburg is competent if the nuclear incident occurs in the exclusive economic zone of the Federal Republic of Germany.

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4. Annex to *Bundesgesetzblatt* 2008 II p. 475.

5. Act on the Paris Nuclear Liability Protocols 2004, *Bundesgesetzblatt* 2008 II p. 902.

6. According to Article 2(1) of Council Decision 2004/294/EC of 8 March 2004, EU member states "shall take the necessary steps to deposit simultaneously their instruments of ratification of the Protocol, or accession to it, with the Secretary-General of the Organisation for Economic Co-operation and Development" (see *Nuclear Law Bulletin* Nos. 73 and 80).

7. *Bundesgesetzblatt* 2008 I p. 1793.

The act furthermore contains an amendment to the Radiation Protection Ordinance (see *Nuclear Law Bulletin* No. 68) which is consequential to the adoption of the Revision Protocols, and amendments to the Act on Administrative Fees and to the Ordinance concerning Costs under the Atomic Energy Act (see *Nuclear Law Bulletin* No. 69).

With regard to the nuclear liability provisions, the act will come into force on the date of the entry into force of the 2004 Protocol to Amend the Paris Convention in accordance with its Article 20.

Hungary

General legislation

Energy Policy 2007-2020 Framework Strategy (2008)

In April 2008, Parliament approved the "Energy Policy 2007-2020" (40/2008) framework strategy which, with respect to nuclear energy, states that the Government is expected to take preliminary steps towards decisions on the commissioning of new nuclear capacities. It further provides that the Government is expected to carry out programmes to ensure the final disposal of radioactive waste.

Indonesia

Radiological protection

Regulation on licensing of uses of ionizing radiation sources and nuclear materials (2008)

This new Regulation[8] of 11 April 2008 reflects international standards in radiological protection as set out in the IAEA Safety Series No. 115 on "International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources". It applies to the use of ionizing radiation sources and nuclear material. According to Chapter II, radiation sources are grouped into categories A, B and C. The use of nuclear material belongs to Group A, and includes research and development, mining, manufacturing, production, storage, transfer, import and export. Chapter III sets out special licence requirements of an administrative and technical nature while Chapter IV provides for application procedures and the issuance of licences.

There are further provisions on the prevention of unlawful movement, theft and sabotage of radioactive sources or nuclear material (Chapter V), exemptions from licence conditions (Chapter VII) and requirements for prior approval when importing or exporting ionizing radiation sources and nuclear material (Chapter VIII). The final chapters (IX and X) deal with inspections and administrative sanctions.

8. Regulation No. 29 implements the Act on Nuclear Energy (see *Nuclear Law Bulletin* No. 59) and revokes Regulation No. 64 of 2000 concerning licensing of activities related to nuclear energy.

Italy

General legislation

Implementing law[9] *on urgent provisions for economic development etc. (2008)*

This new law promotes the resurgence of nuclear energy in Italy. It is the first piece of nuclear legislation to come into effect since the 1987 moratorium on Italy's nuclear programme and it announces a new national energy plan with the aim of constructing new nuclear power plants.

Article 7 of the law states:

1. Within six months from the date of entry into force of this law, the Council of Ministers after a proposal by the Minister of Economic Development, will launch the "national energy strategy", which will indicate the priorities for the short and long term period as well as the measures needed to achieve, also taking into account market mechanisms, the following objectives:

a) diversification of energy sources and geographical areas of supply;

b) improvement of the competitiveness of the national energy system and infrastructure development with a view to the European internal market;

c) promotion of renewable energy and energy efficiency;

d) construction of nuclear power plants on the national territory;

e) promotion of research on fourth generation or on nuclear fusion;

f) increase of investment in research and development in the energy sector and participation in international agreements on technological co-operation;

g) promotion of environmental sustainability in the production and use of energy, also for the reduction of greenhouse gas emissions;

h) ensuring adequate levels of protection for the general public and workers.

Article 28 of the law also establishes a new agency, the National Institute for Protection and Environmental Research (ISPRA). This new body replaces the National Environmental Protection Agency (APAT), the Central Institute for Scientific Research and Technology Applied at Sea (ICRAM) and the National Institute for Wildlife (INFS). ISPRA operates under the supervision of the Minister of the Environment, Land and Sea and has no competencies in the nuclear field.

New draft legislation is being prepared by the Government in order to establish an *ad hoc* regulatory body in the nuclear field which will be responsible for all matters concerning nuclear safety.

9. Law No. 112 dated 25 June 2008 (consolidated into law by Law No. 133 of 6 August 2008) on urgent provisions for economic development, simplification, competitiveness, the stabilisation of public finance and tax equalization; Published in the *Official Gazette* No. 195, 21 August 2008 – Suppl. Ordinary No.196.

Montenegro

Environmental Protection

Law on the Environment (2008)

This new legislation[10] establishes an Environmental Protection Agency (EPA) which shall assume regulatory competence in the field of ionizing radiation, amongst many others pertinent to environmental protection. The EPA shall report to the Ministry of the Environment and be financed from the state budget. According to Article 73 of the law, the EPA was to be established within 30 days of the law's entry into force, but by the end of November 2008, it was still "in the process of formation" and had not yet resumed its regulatory functions.

Legislative and regulatory framework in Montenegro

In Montenegro, there are no nuclear power plants in operation. The use of radiation sources is limited to medical and a few industrial applications. Montenegro resumed regulatory control over radiation sources in February 2003 when a Constitutional Chart was adopted, redefining the Federal Republic of Yugoslavia as a State Union of Serbia and Montenegro, *de facto* a loose confederation of the two states.

Montenegro continues to apply the radiation safety legislation of the former Federal Republic of Yugoslavia and the following instruments, amongst others, are still in force:

- Law on Protection of Ionizing Radiation.[11]
- Decree on the records of and irradiation of the population, patients and persons exposed to ionizing radiation at work.[12]
- Decree on the systematic monitoring of the radionuclide content in the environment.[13]
- Regulation on the application of ionizing radiation sources in medicine and basic provisions.[14]
- Regulation setting the requirements for the marketing and use of radioactive materials, X-ray machines and other devices that generate ionizing radiation.[15]
- Regulation concerning the limits of exposure to ionizing radiation.[16]

10. *Official Gazette* of Montenegro No. 48 of 11 August 2008.
11. *Official Gazette* of the Federal Republic of Yugoslavia, No. 46 (4 October 1996).
12. *Ibid*.
13. *Ibid*.
14. *Official Gazette* of the Federal Republic of Yugoslavia, No. 32/98 (3 July 1998).
15. *Ibid*.
16. *Ibid*.

- Regulation concerning the limits of radioactive contamination of the environment and the modalities of decontamination.[17]

- Regulation concerning the modality of and requirements for the collection, safekeeping, recording, storing, processing and disposal of radioactive materials.[18]

These regulations are broadly based on the basic safety standards of the International Atomic Energy Agency and can be regarded as consistent with international standards.

An effective regulatory body has not yet been established in Montenegro and the capacity of the Ministry of Environment is currently not sufficient to carry out regulatory functions, which is why, a newly constructed and completed storage facility for low and medium radioactive waste cannot be granted an operating licence. Basic regulatory functions are carried out by the Ministry of Health as an interim regulatory body.

Romania

Organisation and structure

Decision on the organisational structure of the Nuclear Agency (2008)

This new Government Decision[19] of 29 August 2008 amends a 2007 decision concerning the regulation and organisational structure of the Nuclear Agency (NA).

According to the amendment, the NA is a specialised body of the central public administration under the Ministry of Economy and Finance. It submits a quarterly report to the Prime Minister on its own activities, international developments in the nuclear field, and the implementation of technical assistance programmes developed under the IAEA, the European Union or other related international bodies and organisations.

The NA is presided over by a managing board comprised of nine members appointed by the Minister of Economy and Finance upon a proposal by the NA president. The NA activities shall be financed from the budget of the Ministry of Economy and Finance.

17. *Official Gazette* of the Federal Republic of Yugoslavia, No. 9/99 (19 February 1999).

18. *Ibid*.

19. Decision No. 923 of 29 August 2008, published in the *Official Journal*, Part I No. 628 of 29 August 2008 amending Governmental Decision No. 267/2007.

Regime of nuclear installations

Decision on the selection of the investors of Units 3 and 4 of Cernavoda NPP (2008)

Governmental Decision[20] of 24 June 2008 amends and completes the Annex to Governmental Decision No. 643/2007 concerning the strategy for selecting investors to finalise Units 3 and 4 of the Cernavoda nuclear power plant.

Under the new decision, Units 3 and 4 of the Cernavoda NPP shall be financed by a company to be established, 51% of the shares of which will be held by Societatea Nationala Nuclearelectrica S.A. (SNN–S.A.). The state shall increase the capital of SNN–S.A. through funds from the National Development Fund and it shall grant, if necessary, state guaranteed loans, under the terms of the law.

The heavy water inventory and the first load of nuclear fuel shall be provided by the state. According to the decision, the state has no obligation to purchase the electricity produced. The company shall have the status of a legal person subject to private law.

Radiological protection (including nuclear emergency planning)

Consolidated version of the Civil Protection Law (2008)

The Civil Protection Law[21] of 2004, as amended in 2008, stipulates that civil protection is a component of national security that aims to prevent and reduce the risk of disasters, and to protect the public, property and the environment from the negative effects of emergency situations and from armed conflicts.

Section 4 of the amended law deals with radiological, chemical and biological protection in the event of an emergency. Public institutions and operators that manufacture, transport, store or handle hazardous substances in such quantities that may endanger the life and health of the public must check for radioactive, chemical and biological contamination of raw materials and products, and where necessary decontaminate their personnel, lands, buildings and machinery. The decontamination is to be performed according to technical regulations established by the respective ministries and approved by the General Inspectorate for Emergency Situations. Pollution control consists of specific measures for the identification and removal of polluting sources, and includes evacuation and agricultural and consumption prohibitions. Operators and public authorities must warn the population immediately of any pollution or contamination around a particular facility and take action to protect the population and mitigate adverse effects.

National strategy for preventing emergency situations (2008)

Governmental Decision of 16 July 2008[22] approves the national strategy for preventing emergency situations caused by technological risks, including nuclear accidents and radiological emergencies.

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20. Decision No. 691 of 24 June 2008, published in the *Official Journal*, Part I No. 594 of 7 August 2008, amending and completing Annex to Governmental Decision No. 643/2007.

21. Civil Protection Law No. 481 of 8 November 2004; a consolidated version of the law with all amendments since 2004 was published in the *Official Journal*, Part I No. 554 of 22 July 2008.

22. No. 762, published in *Official Journal*, Part I No. 556 of 28 July 2008.

According to this strategy, the prevention of nuclear accidents and radiological emergencies consists of identifying and monitoring the potential sources that may cause such emergencies, the evaluation of information, the analysis of early situations, forecasting, and establishing the best methods to mitigate the effects of ionizing radiation.

The objectives of the strategy are as follows:

- Ensuring nuclear safety, public health and environmental protection, safe management of radioactive materials, physical protection.

- Maintaining and improving capability to take action in the event of an emergency, Establishing and maintaining an open, transparent and reliable relationship with the media.

- Implementing Council Decision 87/600/EURATOM on arrangements for the early exchange of information in the event of a radiological emergency and the Agreement between EURATOM and EU non-member states concerning their participation in such arrangements (see *Nuclear Law Bulletin* No. 72).

According to this decision, public authorities and operators are obliged to monitor the radioactivity of the environment, establish forecasts and predictions regarding radioactive contamination of the environment, agricultural products and the population in potentially contaminated areas, notify authorities of an accident, establish protection and action plans in the event of a nuclear accident/radiological emergency and perform emergency exercises on and off site.

National strategy for information sharing and communication in the event of an emergency (2008)

The national strategy for information sharing and communication in the event of an emergency[23] calls for a national campaign of public education and information in the event of a radiological emergency. The Ministry of Interior and Administrative Reform established the strategy under which radioactive substances are included in the category of technological risks, as events involving releases of such substances are dangerous for humans and the environment.

Romania owns one CANDU type nuclear power plant at Cernavoda which poses a low risk of nuclear accidents, but the nuclear power plant in Kozloduy, Bulgaria is seen as a major risk. To date, Romania has only been affected by the Chernobyl accident, primarily in the north-eastern part of the country, where an increased rate of thyroid cancer amongst adults and children born with malformations have been recorded.

Russian Federation

Organisation and structure

Decree transferring responsibilities to the Ministry of Natural Resources and Ecology (2008)

According to this decree of 29 May 2008,[24] responsibility for nuclear safety and radiological protection was transferred to the Ministry of Natural Resources and Ecology (MNRE), the federal

23. *Official Journal*, Part I No. 426 of 6 June 2008.

24. Decree No. 724 on the system and structure of the Federal Executive Authorities.

authority responsible for policy development and legal regulations in the field of nuclear safety. The Federal Environmental, Industrial and Nuclear Supervision Service (Rostechnadzor) is also now placed under the authority of the MNRE.

An earlier decree of 12 May 2008 had approved a new structure of federal executive authorities. Amongst other changes, the Ministry of Natural Resources was reorganised to the Ministry of Natural Resources and Ecology, and federal ministers have the right to give necessary instructions to the heads of subordinated federal services and federal agencies.

Slovak Republic

Environmental Protection

Transposition of Council Directive 2006/117/Euratom (2008)

An Amendment to the Atomic Act, concerning the transposition of Council Directive 2006/117/Euratom on the supervision and control of shipments of radioactive waste and spent fuel was approved by the National Council of the Slovak Republic (Parliament) on 18 September 2008 and will enter into force on 25 December 2008.[25]

Before submission to Parliament, the European Commission had been notified of the draft amendment pursuant to Article 33(3) of the Euratom Treaty as well as pursuant to Directive 98/34/EC. Until 30 April 2008, a three-month period of "preparatory works interruption" was applied during which the European Commission was expected to provide its opinion on the proposal. Other member states were also allowed to submit comments, but neither the Commission nor other member states raised any objections to the draft.

In parallel to this process, preparatory work on a completely new Atomic Act was in progress during 2007 and 2008. The new law is expected to enter into force on 1 January 2010, *inter alia*, to meet the deadline set in the action plan of the Western European Nuclear Regulators Association (WENRA) to implement reference levels by the end of 2010.

Ukraine

Organisation and structure

Decree creating the state enterprise "Nuclear Fuel" (2008)

By Government Decree dated 10 September 2008,[26] the Ministry of Energy was entrusted with the task of establishing the state enterprise "Nuclear Fuel", following the liquidation of the state-run enterprise UkrAtomProm.[27]

25. The act was published on 25 October 2008 as Act No. 408/2008 on amendments to and modifications of the Act No. 541/2004 Coll. (Atomic Act).

26. Decision No. 841 of the Cabinet of Ministers.

27. Liquidated by Decree of 17 April 2008, No. 650.

By that same decree, the statute of "Nuclear Fuel" was adopted according to which it will operate under the supervision of the Minister of Energy. With respect to its legal status, this new enterprise is stipulated to be a legal entity with separate property, independent accounts, and the right to contract for commodities and services.

Order No. 1328 of 16 October 2008, appoints *Petro Shvydko* as Director General of Nuclear Fuel.

Radioactive Waste Management

Amendment to the law on radioactive waste management (2008)

On 21 May 2008, Verkhovna Rada, the Parliament of Ukraine, amended its laws on radioactive waste management (see *Nuclear Law Bulletin* Nos. 55 and 58).

According to the amended legislation, the Cabinet of Ministers is to establish a state policy, create regulatory authorities and develop government programmes in the field of radioactive waste management. The law also imposes increased responsibilities on all organisations and companies that generate radioactive waste. The law on environmental protection was also modified to better implement the "polluter pays" principle and to provide for financial means of managing radioactive waste; in particular, waste producers will contribute to a fund dedicated to cover all expenses related to radioactive waste management including the selection and construction of a site. The fund is to be an integral part of the state budget.

United Kingdom

Organisation and structure

New Ministry of Energy and Climate Change (2008)

A new Department of Energy and Climate Change was created in the United Kingdom on 3 October 2008. Ed Miliband is the Secretary of State of the Department, who assumes responsibility for areas previously housed within two departments - the Department for Environment, Food and Rural Affairs (DEFRA) and the Department of Business, Enterprise and Regulatory Reform (BERR). The new department is expected to provide more direction and focus to the pressing issues of both security of energy supply and climate change.

A central task of the department will be "delivering a low carbon economy and ensuring secure and affordable energy supply". The area of low-carbon supply is split between "renewable energy, carbon capture and storage" and "nuclear strategy and delivery, including radioactive waste and international non-proliferation".

United States

Regime of nuclear installations

Next generation nuclear plant licensing strategy (2008)

On 13 August 2008, the Nuclear Regulatory Commission (NRC) and the U.S. Department of Energy (DOE) transmitted to Congress a joint report, setting forth a licensing strategy for the next generation nuclear plant (NGNP). The report was mandated by the Energy Policy Act of 2005 (EPA). The NGNP is envisioned as a very high temperature gas reactor (VHTR) designed to produce high temperature process heat for the production of hydrogen and other industrial uses.

The EPA establishes an NGNP target date of 30 September 2021 to complete construction and begin operations of prototype nuclear reaction and associated process heat or hydrogen facilities. Alternatively, Congress will accept a report by 30 September 2021 establishing an alternate date for completion.[28]

The Secretary of Energy and the Commission have adopted the following licensing strategy, which they believe provides the best opportunity for meeting the 2021 deadline for initial operation of a prototype NGNP.

(1) The applicant for the NGNP prototype licence should submit a combined licence (COL) application under Subpart C, "Combined Licenses", 10 C.F.R. Part 52 of the Code of Federal Regulations.[29]

(2) The best approach to establish the licensing and safety basis for the NGNP is the development of a risk-informed and performance-based technical approach adapting existing NRC LWR technical licensing requirements.

(3) Research and development (R&D) must address VHTR safety-relevant phenomena and perform confirmatory analysis. To the extent possible and appropriate, the NRC will participate in R&D programmes and use the information to develop independent confirmatory analysis capability. The NRC will also use experimental data which the applicant submits as part of the licence submission as well as data available in open literature.

(4) The working group expects various areas to require regulatory infrastructure development, including regulatory guides, standard review plans, codes and standards, reactor oversight process development and inspection programmes. The guidance documents should address NGNP-specific issues involving security and safeguards, spent fuel, environmental matters as well as inspection and start-up testing.

(5) If other issues relating to the NGNP design and the application are identified in the future, the NRC will need to engage with the applicant during the pre-application stage to address them.

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28. 42 U.S.C. §16025(c).

29. For further information on the COL, see article by Stephen G. Burns, "Looking Backward, Moving Forward: Licensing New Reactors in the United States", *Nuclear Law Bulletin* No. 81.

(6) The NRC estimates that it will take five years to develop necessary regulatory infrastructure for a confirmatory safety analysis and licence review and four to five years to conduct the licensing review. To meet the timing goals for NGNP set forth in § 644(b) of the EPA, the NRC staff and the NGNP applicant will have to engage in a 3-year pre-application review starting in 2010, followed by an aggressive 4-year licence application review starting in 2013.

Radioactive waste management

Public health and environmental radiation protection standards for Yucca Mountain, Nevada (2008)

On 15 October 2008, the U.S Environmental Protection Agency (EPA) published amendments to the public health and safety standards for radioactive material stored or disposed of in the potential repository at Yucca Mountain, Nevada.[30] These standards came into effect on 14 November 2008.

On 3 June 2008, the U.S. Department of Energy (DOE) submitted a licence application to the U.S. Nuclear Regulatory Commission (NRC) for the construction of a repository for spent nuclear fuel, high-level radioactive waste and other radioactive waste (collectively "radioactive waste") at Yucca Mountain.

EPA first established generic standards for the management, storage and disposal of radioactive waste on 19 September 1985.[31] On 20 December 1993, the EPA issued amended disposal standards in response to the U.S. Court of Appeals for the First Circuit's judicial remand of the initial disposal standards.[32] Section 801(a) of the Energy Policy Act of 1992 (EnPA) directed EPA to develop standards specifically applicable to releases from radioactive material stored or disposed of at a radioactive waste repository at Yucca Mountain.[33] The EnPA directed EPA to contract with the National Academy of Sciences (NAS) to conduct a study and make recommendations to EPA on reasonable radiation protection standards for Yucca Mountain. EPA's standards were to be based on and consistent with the NAS recommendations unless policy considerations justified different standards.

On 13 June 2001, EPA issued final standards for the Yucca Mountain site.[34] As directed in the EnPA, these particular standards were tailored to the specific Yucca Mountain site. The 2001 standards included the following:

(1) A standard to protect the public during management and storage operations on the Yucca Mountain site.

30. Public Health and Environmental Radiation Protection Standards for Yucca Mountain, Nevada, 73 Fed. Reg. 61256 (15 October 2008).

31. Environmental Standards for the Management and Disposal of Spent Nuclear Fuel; High-Level and Transuranic Radioactive Wastes, 50 Fed. Reg. 38066 (19 September 1985).

32. Environmental Radiation Protection Standards for the Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes, 58 Fed. Reg. 66398 (20 December 1993).

33. 42 U.S.C. § 10141 n.

34. Public Health and Environmental Radiation Protection Standards for Yucca Mountain, NV, 66 Fed. Reg. 32074 (13 June 2001).

(2) An individual-protection standard to protect the public from releases from the undisturbed disposal system.

(3) A human-intrusion standard to protect the public after disposal from releases caused by a drilling penetration into the repository.

(4) A set of standards to protect ground water from radionuclide contamination caused by releases from the disposal system.

(5) The requirement that compliance with the disposal standards be shown for 10 000 years.

(6) The requirement that DOE continue its projections for the individual-protection and human-intrusion standards beyond 10 000 years to the time of peak (maximum) dose and place those projections in the Environmental Impact Statement (EIS) for Yucca Mountain.

(7) The concept of the reasonably maximally exposed individual (RMEI) defined as a hypothetical person whose lifestyle is representative of the local population living today in the Town of Amargosa Valley, is the individual against whom the disposal standards should be assessed.

(8) The concept of a "controlled area", defined as an area immediately surrounding the repository whose geology is considered part of the natural barrier component of the overall disposal system and inside of which radioactive releases are not regulated.[35]

The Nuclear Energy Institute (NEI), the State of Nevada and the Natural Resources Defense Council (NRDC) challenged in the U.S. Court of Appeals for the District of Columbia the standards promulgated in 2001. On 9 July 2004, the court dismissed all of the challenges except for that relating to the EPA's 10 000 year compliance period.[36] The court found that EPA's decision to apply compliance standards only to the first 10 000 years following disposal was not "based upon and consistent with" the NAS Report. It also ruled that EPA's decision on the compliance period was not justified on policy grounds. The court therefore vacated the standards found in 40 C.F.R Part 197 "to the extent that [they] incorporate[d] a 10 000 year compliance period".[37]

The final rule published in the *Federal Register* on 15 October 2008 responds to the court's ruling. It establishes the dose standards for a period from 10 000 years through one million years following disposal of waste. The rule provides that the dose standard for the period beyond 10 000 years is 1 mSv/yr (100 mrem/yr), consistent with NAS recommendations to assess the peak dose. EPA does not amend its standard up to 10 000 years after disposal. That standard remains 15 mrem/yr. EPA notes that 15 mrem/year, the standard for the period up to 10 000 years after disposal, was neither challenged nor ruled on in the Court of Appeals for the District of Columbia.

35. Public Health and Environmental Radiation Protection Standards for Yucca Mountain, Nevada, 73 Fed. Reg. at 61259.

36. Nuclear Energy Institute *v* Environmental Protection Agency, 373 F.3d 1251 (D.C. Cir. 2004).

37. *Ibid* at 1315.

Third party liability

Inflation adjustment to the Price-Anderson Act (2008)

On 29 September 2008, the U.S. Nuclear Regulatory Commission adjusted for inflation the retrospective premium applicable to nuclear power plant operators under the U.S. Price-Anderson Act. The nuclear liability limit now totals USD 11 937 600 000.[38]

The Atomic Energy Act requires the NRC to adjust the maximum total and annual standard deferred premiums specified in the Price-Anderson Act for inflation at least once during each 5-year period following 20 August 2003.

The adjustment increases the nuclear liability limit for nuclear power plants from about USD 10.3 billion to about USD 11.9 billion, effective 29 October 2008. This sum is based on the first tier of USD 300 million of insurance from American Nuclear Insurers, plus the retrospective premiums comprising the multiple of the number of power reactors licensed to operate at the time of the nuclear incident. This retrospective premium is now at USD 111.9 million per reactor per incident (with 104 operating nuclear power plants). An additional 5 percent may be assessed for claims expenses.

The *annual* retrospective payment per nuclear power plant has been increased from USD 15 million to USD 17.5 million. This represents an increase of about 16.7 percent over the figure set five years ago.

Commercial power reactors rated at less than 100 000 kw(e) and transport activities are regulated under a different scheme. The maximum government indemnity for these small reactors is USD 500 million, and there is a minimum required payout from insurance of USD 60 million which brings the total liability to USD 560 million.

38. Inflation Adjustment to the Price-Anderson Financial Protection Regulations, 73 Fed. Reg. 56451 (29 September 2008).

TEXTS

Act of the Republic of Belarus

30 July 2008 No. 426-Z[1]
on the Use of Atomic Energy[2]

CHAPTER 1

General provisions

Article 1

Terms and definitions

The terms and definitions that are used in the act are the following:

- Emergency preparedness: the capacity to take immediate steps that will effectively, reliably and promptly prevent or reduce the probability of a radiation accident during the performance of activities involving the use of atomic energy.
- Emergency response: implementation of measures aimed at restricting or minimising the consequences of, or the cleaning up after, a radiation accident.
- Nuclear power plant: a nuclear installation for the production of electricity and thermal energy under set regimes and conditions, located within a defined territory. To achieve this aim use is made of a nuclear reactor (or reactors) and a set of systems, devices, equipment and facilities that are essential to its functioning.
- Atomic energy: energy released in nuclear reactions, and with radioactive decay, as well as the energy of ionising radiation that is generated.
- Nuclear power plant unit: part of a nuclear power plant comprising one nuclear reactor together with other equipments that correspond to the functions of the nuclear power plant as designed.

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1. Passed by the Chamber of Representatives on 24 July 2008; approved by the Council of the Republic on 28 June 2008.

2. Unofficial translation by the OECD.

- Commissioning of a nuclear installation and/or storage facility: a process during which systems and components of a nuclear installation and/or storage facility that have been constructed are put into operation and their compliance with the design of these facilities is evaluated.
- Decommissioning of a nuclear installation and/or storage facility: a process aimed at terminating the further use of a nuclear installation and/or storage facility for its intended purpose, entailing maintenance of safety for workers of the operating organisation, the public and the environment.
- Activities involving the use of atomic energy: licensed activities by individuals related to siting, planning, construction, commissioning, operation, limitation of operation, extension of life and decommissioning of a nuclear installation and/or storage facility as well as the management of nuclear materials, spent nuclear fuel and/or operational radioactive waste.
- Items used in atomic energy: nuclear installation, storage facility, nuclear materials, spent nuclear fuel, operational radioactive waste.
- Spent nuclear fuel: nuclear material irradiated in a reactor core and permanently withdrawn from it.
- Design of nuclear installation and/or storage facility: design and technical documentation which include a case for investment, an environmental impact assessment, a safety case, architectural and construction designs and other documentation in compliance with legal enactments, including technical enactments, that are required for the siting, construction, commissioning, operation and decommissioning of a nuclear installation and/or storage facility.
- Storage facility: stationary items and/or structures intended for the storage of nuclear materials, spent nuclear fuel and/or operational radioactive waste.
- Siting of a nuclear installation and/or storage facility: selection of a location where a nuclear installation and/or storage facility is to be build. This includes a corresponding evaluation and determination of criteria which would serve as the basis of a design for a nuclear installation and/or storage facility.
- Construction of a nuclear installation and/or a storage facility: manufacture and assembling of units of a nuclear installation and/or storage facility, construction and erection of structures and utilities, installation of units and equipment, carrying out performance tests.
- Physical protection: a set of technical, organisational and other measures aimed at preserving the integrity of items used in atomic energy and preventing unauthorised access to them.
- Operational radioactive waste: radioactive waste arising as a result of operation of a nuclear installation and/or storage facility.
- Operating organisation: an organisation which, using its own resources or with the involvement of other organisations, carries out activities related to siting, planning, construction, commissioning, operation, limitation of operation, extension of life and decommissioning of a nuclear installation and/or storage facility, and also related to the management of nuclear materials, spent nuclear fuel and/or operational radioactive waste.
- Nuclear safety: a state in which the public and the environment are protected from the harmful effects of ionising radiation arising from a nuclear installation and/or storage facility, through proper conditions of their operation as well as through proper management of nuclear materials, spent nuclear fuel and/or operational radioactive waste.

- Nuclear installation: structures and complexes with a nuclear reactor (reactors), including structures and complexes with commercial, experimental and research nuclear reactors and critical and sub-critical nuclear rigs (assemblies).
- Nuclear material: material containing and capable of breeding fissile materials (substances).
- Nuclear reactor: a device for the implementation of a controllable nuclear chain reaction.

Article 2

Legal regulation of activities involving the uses of atomic energy

(1) This act governs siting, planning, construction, commissioning, operation, limitation of operation, extension of life and decommissioning of a nuclear installation and/or storage facility. It further governs the management of nuclear materials during the operation of a nuclear installation and/or storage facility, spent nuclear fuel and/or operational radioactive waste as well as other issues in the field of nuclear energy.

(2) Issues linked to the management of nuclear materials, spent nuclear fuel and/or operational radioactive waste and other matters in the field of atomic energy that are not regulated by this act shall be regulated by legislation on radiation protection and other legislation.

(3) Legislation in the field of atomic energy shall be based on the Constitution and shall comprise this act, other legal enactments and international agreements entered into by the Republic of Belarus.

Article 3

Principles for carrying out activities involving the uses of atomic energy

Activities involving the use of atomic energy shall be founded on the following principles:

- Priority of protection of life and health of present and future generations and protection of the environment from activities involving the use of atomic energy.
- Ensuring that the benefit to citizens and the public by using atomic energy outweighs the damage that may be caused by activities involving the use of atomic energy.
- Ensuring nuclear safety and radiation protection.
- Compensating for damage caused by the harmful impact of ionising radiation or activities involving the use of atomic energy.
- Providing complete, reliable and timely information related to activities involving the use of atomic energy provided such information does not contain state secrets and is not classified as restricted information.
- Prohibition of the production of nuclear weapons and other nuclear explosive devices.

CHAPTER 2

State control/State regulation to ensure nuclear safety

Article 4

Powers of the President of the Republic of Belarus in the field of atomic energy

In the field of atomic energy, the President shall:

- Establish the main trends in state policy.
- Ratify dedicated state programmes.
- Take decisions on the siting, planning, construction, commissioning, extension of life, limitation of operation and decommissioning of a nuclear power plant or a unit of such a plant.
- Determine which Republic-level state control agency or other state organisation has responsibility for a nuclear power plant.
- Take decisions on matters related to maintaining safety, protecting the public and the environment when using atomic energy.
- Take decisions on matters related to warnings in emergency situations during the use of atomic energy and the cleaning up after such situations.
- Have a right to establish state agencies and other organisations in charge of the development of atomic energy and their powers in this field.
- Exercise other powers under this act and other legal enactments.

Article 5

Powers of the Government of the Republic of Belarus in the field of atomic energy

In the field of atomic energy, the Government shall within the scope of its powers:

- Monitor the implementation of state policy.
- Co-ordinate the activities of state agencies and state organisations.
- Organise the drafting and monitor the implementation of dedicated state programmes.
- Take decisions on the siting, planning, construction, commissioning, extension of life, limitation of operation and decommissioning of a nuclear installation (except for nuclear power plants and units of such plants) and/or a storage facility.
- Determine which Republic-level state control agency or other state organisation has responsibility for a nuclear installation and/or storage facility (except for atomic power plants).
- Establish the procedure concerning the discussion of issues with public associations, other organisations and citizens.

- Elaborate provisions for the compensation of damage caused by exposure to ionising radiation or by activities involving the use of atomic energy, in compliance with this act and other legal enactments.
- Establish the conditions and procedure for physical protection of items used in atomic energy.
- Establish the procedure for the implementation of state supervision regarding physical protection of items used in atomic energy.
- Take steps to ensure that international agreements entered into by the Republic of Belarus are fulfilled.
- Co-ordinate international co-operation on the part of the Republic of Belarus.
- Exercise other powers under this act, other acts and enactments of the President of the Republic of Belarus.

Article 6

Republic-level state control agencies and other state organisations in the field of atomic energy and their powers

(1) Under this act and other legal enactments, state control in the field of atomic energy shall be exercised by the Ministry of Energy, the Ministry for Emergency Situations, by Republic-level state control agencies and by other state organisations authorised by the President of Belarus.

(2) The Ministry of Energy shall, within the scope of its powers:

- Participate in the formation and implementation of state policy.
- Promote a single state scientific/technical and investment policy.
- Draft proposals to support activities involving the use of atomic energy including the regulation of matters relating to the supply of nuclear installations with nuclear fuel.
- Exercise other powers in accordance with this act and other legal enactments.

(3) The Ministry of Emergency Situations shall, within the scope of its powers:

- Organise emergency preparedness of forces and means at the disposal of agencies and sub-divisions in charge of emergency situations to take action in the event of an emergency situation. Monitor the implementation of measures aimed at preventing such situations.
- Organise the drafting of an external emergency plan.
- Establish the requirements for maintenance of nuclear safety and radiation protection during the performance of activities involving the use of atomic energy.
- Organise measures aimed at limiting, minimising or dealing with the consequences of a radiation accident that has occurred during the performance of activities involving the use of atomic energy.
- Exercise other powers in accordance with this act and other legal enactments.

(4) Republic-level state control agencies and other state organisations authorised by the President shall within the scope of their powers:

- Draw up proposals for the development and implementation of a single state scientific/technical and investment policy.
- Participate in the performance of state expert appraisals of designs for nuclear installations and/or storage facilities through the legally-established procedure.
- Take part in the organisation and performance of work to evaluate compliance of equipment, products and processes for items used in atomic energy.
- Ensure safety and carry out measures to protect the environment at items used in atomic energy falling within the scope of specific authorities.
- Organise the discussion of issues with public associations, other organisations and citizens.
- Take part in activities relating to the training of specialists.
- Exercise other powers in accordance with this act and other legal enactments.

Article 7

Republic-level state control agencies carrying out state regulation of activities to ensure nuclear safety

(1) The Ministry of Emergency Situations, the Ministry of Natural Resources and Environmental Protection, the Ministry of Health, the Ministry of Internal Affairs and the Committee for State Security (hereinafter referred to as state regulatory agencies) are the authorised Republic-level state control agencies effecting state regulation of activities to ensure safety in the use of atomic energy, unless otherwise established by the President.

(2) The Ministry of Emergency Situations shall, within the scope of its powers:

- Implement state supervision to ensure nuclear safety and radiation protection, and be responsible for providing physical protection of items used in atomic energy.
- Organise and implement state supervision over the management of spent nuclear fuel and operational radioactive waste.
- Implement monitoring of observance of the law to ensure nuclear safety and radiation protection.
- Participate in the organisation and performance of work to evaluate compliance of equipment, products and processes for items used in atomic energy.
- Ensure the functioning of a single state system of accountancy and monitoring for ionising radiation sources and one for nuclear materials.
- Organise expert appraisals on the safety of nuclear installations and/or storage facilities, with designs, including the involvement of independent experts.
- Exercise other powers in accordance with this act and other legal enactments.

(3) Other state regulatory agencies in the field of atomic energy shall, within the scope of their powers:

- Monitor the provision of physical protection for items used in the field of atomic energy.
- Adopt commissioning and decommissioning programmes for nuclear installations and/or storage facilities.
- Participate in the drafting of an external emergency plan.
- Adopt technical enactments in the field of atomic energy.
- Exercise other powers in accordance with this act and other legal enactments.

(4) State regulatory agencies in charge of nuclear safety shall, in exercise of their powers related to safety and the monitoring and supervision of activities involving the use of atomic energy, be independent of Republic-level agencies and other state organisations carrying out state control in the field of atomic energy.

Article 8

Powers of local government agencies

In the field of atomic energy, local government agencies shall, within the scope of their powers:

- Organise and participate in the discussion of issues with public associations, other organisations and citizens.
- Participate in measures to ensure protection of the public and the environment from the impact of ionising radiation at levels above those established by technical enactments.
- Monitor, within the territory of the relevant administrative area, the preparedness of organisations and the public for action in the event of a radiation accident.
- Participate in restricting or reducing the consequences of or cleaning up after a radiation accident.
- Inform the public through the local media of the radiation circumstances within the territory of the relevant administrative area.
- Exercise other powers in accordance with this act and other legal enactments.

Article 9

Features of technical standardisation and confirmation of compliance

(1) Technical enactments in the field of atomic energy shall be adopted in agreement with state regulatory agencies in the field of nuclear safety.

(2) Equipment, items and processes used in atomic energy shall be subject to confirmation of compliance in accordance with the law.

Article 10

Licensing

Licensing in the field of atomic energy shall be carried out in accordance with legal enactments on licensing.

Article 11

Licences conferring a right to perform activities involving the use of atomic power and requirements applicable to workers

(1) Certain types of activities shall be carried out by workers of operating organisations and organisations performing work and/or providing services for activities involving the use of atomic energy, provided that these workers possess licences conferring a right to perform these activities issued by authorised state agencies in charge of nuclear safety.

(2) For the performance of the activities, workers must obtain licences conferring a right to carry out work involving the use of atomic energy. The related requirements, including skills, level of education, training and retraining and the procedure for obtaining these licences shall be established by the Government of the Republic of Belarus.

(3) A list of medical contraindications and a schedule of professions to which these contraindications relate. Also, the requirements for the performance of medical examinations and mental and physical checks shall be established in legislation.

CHAPTER 3

Management of nuclear materials, spent nuclear fuel and/or operational radioactive waste

Article 12

State accountancy and monitoring of nuclear materials, spent nuclear fuel and operational radioactive waste

(1) Nuclear materials and spent nuclear fuel shall be subject to state accountancy and monitoring in the state nuclear materials accountancy and monitoring system.

(2) Operational radioactive waste shall be subject to state accountancy and monitoring in the single state accountancy and monitoring system for ionising radiation sources.

(3) The procedure for the operation of the state nuclear materials accountancy and monitoring system, and also the single state accountancy and monitoring system for ionising radiation sources, shall be established by the Government of the Republic of Belarus.

Article 13

Transportation of nuclear materials, spent nuclear fuel and/or operational radioactive waste

(1) Transportation of nuclear materials, spent nuclear fuel and/or operational radioactive waste shall be carried out in accordance with this act and legal enactments in the field of transportation of hazardous goods.

(2) During transportation of nuclear materials, spent nuclear fuel and/or operational radioactive waste, persons carrying out the transportation must put in place measures to prevent incidents and accidents and take steps to mitigate the consequences should incidents and accidents occur. They area to clean up and also implement measures to protect workers, the public, the environment and property from the consequences of potential accidents during transportation.

(3) Confinement of and cleaning up after accidents during transportation of nuclear materials, spent nuclear fuel and/or operational radioactive waste shall be carried out using the capacities of persons carrying out the transportation and specialised sub-divisions of the Ministry for Emergency Situations.

CHAPTER 4

Siting and construction of nuclear installations and/or storage facilities

Article 14

Decisions concerning the siting and construction of nuclear installations and/or storage facilities

Decisions on the siting and construction of nuclear installations and/or storage facilities, including decisions on proposals put forward by interested Republic-level state control agencies and other state organisations, shall be taken with due consideration given the following requirements:

- The need to resolve socio-economic problems in the Republic of Belarus and its individual regions, with consideration given to potential consequences of the site of these facilities.
- The absence of any threat to the safety of the nuclear installation and/or storage facility posed by civil or military facilities located nearby.
- The conditions necessary for the environmentally safe siting of the nuclear installation and/or storage facility which meet legal requirements on environmental protection and sustainable utilisation of natural resources. This should be confirmed by positive conclusions from state and other expert appraisals as envisaged in laws.
- Other requirements established in laws.

Article 15

Revocation of decision to construct a nuclear installation and/or storage facility

(1) A decision to construct a nuclear installation and/or storage facility must be revoked and its construction discontinued in the event that factors are identified which will lead to a decrease of the safety level for these facilities or to contamination of the environment, or other negative consequences, according to conclusions of state and other expert appraisals as envisaged in laws.

(2) The revocation of a decision to construct a nuclear installation and/or storage facility shall be carried out by the agency or official that took the decision to construct these facilities.

(3) Proposals to revoke a decision to construct a nuclear installation and/or storage facility shall be submitted to the agency or official that took the decision by Republic-level state control agencies, local government agencies or public associations and other organisations or citizens, providing grounds for the factors indicated in the first section of this article.

(4) Losses associated with the revocation of a decision to construct a nuclear installation and/or storage facility shall be subject to compensation by the organisations through whose fault the factors indicated in the first section of this article were not identified in a timely manner and taken into account.

Article 16

Designs of nuclear installations and/or storage facilities

(1) The development of designs for nuclear installations and/or storage facilities shall take place in accordance with the requirements of the law on construction, architecture and town planning, the law on the protection and utilisation of land, the law on the use of underground resources, the law on public sanitary and epidemiological wellbeing, the law on protection of the public and territories from emergency situations and the law on environmental protection and appropriate use of natural resources, including technical enactments.

(2) In a design for a nuclear installation and/or storage facility, it is compulsory to provide justification for the size of the land that must be made available, the need to establish restrictions (encumbrances) on the rights to utilise the site for the planned nuclear installation and/or storage facility, taking into account the situation of functional capital structures (buildings, edifices), and other production, transport and engineering infrastructure facilities and the setting up of a health protection zone and observation zone.

(3) The design for a nuclear installation and/or storage facility should envisage measures for safe decommissioning of these facilities and measures for the safe management of nuclear materials, spent nuclear fuel and/or operational radioactive waste as a compulsory stage of any nuclear technology cycle.

(4) The design for a nuclear installation and/or storage facility shall undergo legally required state and other expert appraisals to confirm the safety of these facilities.

Article 17

Health protection zone and observation zone

(1) To protect the public and the environment around the site of a nuclear installation and/or storage facility, under this act radiation safety legislation and public sanitary and epidemiological wellbeing legislation, a health protection zone and an observation zone may be set up.

(2) A health protection zone shall be established in order to reduce the harmful impact of ionising radiation associated with activities involving the use of atomic energy on the health of the public.

(3) An observation zone shall be established in order to ensure that reliable information is obtained on natural background radiation and radioactive contamination of the atmosphere and surface and underground water around the site of a nuclear installation and/or storage facility.

(4) In a health protection zone it is prohibited to locate capital structures (buildings, edifices) that do not relate to the functioning of the nuclear installation and/or storage facility, or other facilities belonging to the production, transport or engineering infrastructure, that are not envisaged in the design of the nuclear installation and /or storage facility.

(5) Changes to the functional purpose of capital structures (buildings, edifices) or other facilities belonging to the production, transport or engineering infrastructure that are envisaged in the design of the nuclear installation and/or storage facility and which are located in a health protection zone shall be permitted subject to agreement with state regulatory agencies on the basis of a proposal from the operating organisation.

(6) The need to establish a health protection zone and an observation zone, together with the size of these zones and their boundaries, shall be established in the design for the nuclear installation and/or storage facility in line with safety requirements as envisaged in technical enactments and shall be agreed with authorised state agencies and institutions carrying out state sanitary supervision.

(7) The size of a health protection zone and an observation zone around a nuclear installation and/or storage facility shall be established taking into account potential external irradiation levels and also the magnitude and area of potential propagation of radioactive discharges into the air and/or surface and underground water. The procedure for the approval of health protection zones and observation zones and the establishment and delineation of their boundaries, and also the requirements for their protection and use, shall be established by the Government of the Republic of Belarus.

(8) In health protection zones and observation zones, authorised state agencies and institutions carrying out state sanitary supervision may introduce restrictions on economic activities in accordance with the law.

(9) In health protection zones and observation zones, radiation checks and radiation monitoring of the environment must be carried out in accordance with this act and with other legal enactments.

CHAPTER 5

Commissioning and decommissioning of nuclear installations and/or storage facilities

Article 18

Licensing and commissioning of a nuclear installation and/or storage facility

(1) Licensing of a nuclear installation and/or storage facility for operation shall be carried out in accordance with the procedure established in the law on construction, architecture and town planning, including technical enactments.

(2) Commissioning of a nuclear installation and/or storage facility shall take place in accordance with the nuclear installation and/or storage facility commissioning programme drawn up by the operating organisation on the basis of the designs for these facilities. A nuclear installation and/or storage facility commissioning programme shall be agreed with state regulatory agencies and adopted by the agency or official that took the decision on siting and construction of the nuclear installation and/or storage facility. The periods for drafting, agreeing and adopting a

nuclear installation and/or storage facility commissioning programme shall be established by technical enactments.

Article 19

Life extension for a nuclear installation and/or storage facility

(1) A decision on life extension for a nuclear installation and/or storage facility shall be taken by the agency or official that took the decision on the construction of these facilities.

(2) A life extension proposal for a nuclear installation and/or storage facility shall be made by the Republic-level state control agency, or another state organisation, responsible for the nuclear installation and/or storage facility provided appropriate grounds have been submitted by operating organisations that have been duly agreed with state regulatory agencies.

Article 20

Decommissioning or limiting operation of a nuclear installation and/or storage facility

(1) Decommissioning or limiting operation of a nuclear installation and/or storage facility shall take place in accordance with the requirements of technical enactments in the field of atomic energy.

(2) The operating organisation shall draw up a decommissioning programme five years prior to the end of the design life of a nuclear installation and/or storage facility. This should contain measures for the dismantling of these facilities, the management of nuclear materials, spent nuclear fuel and/or operational radioactive waste, as well as measures for subsequent monitoring and state supervision of the facilities.

(3) A nuclear installation and/or storage facility decommissioning programme shall be agreed with state regulatory agencies and sent by the Republic-level state control agency or other state organisation for ratification to the agency or official that took the decision on the construction of the nuclear installation and/or storage facility.

(4) In the event that factors are identified during the operation of the nuclear installation and/or storage facility that lead to a reduction in the safety level of these facilities, contamination of the environment or other negative consequences based on conclusions drawn by state and other expert appraisals envisaged in law, the agency or official that took the decision to construct the nuclear installation and/or storage facility shall take a decision on premature decommissioning or a decision on limiting the operation.

(5) Proposals for premature decommissioning or proposals for limiting operation of a nuclear installation and/or storage facility shall be made by state agencies, local government agencies or public associations, other organisations or citizens to the agency or official that took the decision to construct the nuclear installation and/or storage facility.

(6) Premature decommissioning or limiting operation of a nuclear installation and/or storage facility shall take place in accordance with a premature decommissioning programme or operation limitation programme drawn up by the operating organisation. These programmes must be drawn up, agreed and adopted within one year of the date of the decision on premature decommissioning or the decision to limit operation, following the procedure envisaged in section 3 of this article.

Article 21

Funds for decommissioning of nuclear installations and/or storage facilities

(1) A nuclear installation and/or storage facility decommissioning fund shall be set up for the decommissioning, premature decommissioning or the limitation of operation of nuclear installations and/or storage facilities.

(2) The procedure for the creation of the nuclear installation and/or storage facility decommissioning fund shall be established by the President of Belarus.

(3) For nuclear power plants or their units, the fund shall be created from money received from the sale of electricity and thermal energy and provision of other services as well as from other sources that are not in breach of the law.

(4) The fund shall only be used to finance measures envisaged in programmes for decommissioning, premature decommissioning or limitation of the operation.

CHAPTER 6

Physical protection of items used in atomic energy

Article 22

Physical protection of items used in atomic energy

Physical protection of items used in atomic energy shall be provided for the following purposes:

- To prevent unsanctioned ingress onto the territory of a nuclear installation and/or storage facility, and to prevent unsanctioned access to nuclear materials, spent nuclear fuel and/or operational radioactive waste and their theft or damage to them.

- Timely identification, prevention and termination of threats to the safety of items used in atomic power, including threats of a terrorist or diversion.

- Detection and return of lost or stolen nuclear materials, spent nuclear fuel and/or operational radioactive waste.

Article 23

Provision of physical protection for items used in atomic energy

(1) Physical protection measures for a nuclear installation and/or storage facility should be provided at all stages of design, construction, commissioning, operation, limitation of physical characteristics, life extension and decommissioning as well as during the management of nuclear materials, spent nuclear fuel and/or operational radioactive waste.

(2) Physical protection for items used in atomic energy shall be provided by operating organisations and Republic-level state control agencies within the scope of their powers.

(3) State supervision over physical protection for items used in atomic energy shall be carried out by authorised state regulatory agencies, through a procedure established by the Government.

(4) The operation of a nuclear installation and/or storage facility, as well as any work involving the use of nuclear materials or the handling of spent nuclear fuel and/or operational radioactive waste, shall be prohibited if the necessary measures to meet physical protection requirements have not been taken.

Article 24

Restriction of the rights of individuals on the site of a nuclear installation and/or storage facility

(1) In order to provide physical protection for items used in atomic energy and to ensure the safety of workers of operating organisations, movements and actions by individuals, including workers, on the site of a nuclear installation and/or storage facility or in the health protection zones of such facilities may be restricted.

(2) In order to identify substances, materials and items which may be used to carry out an unlawful act in the operation of a nuclear installation and/or storage facility, special systems are to be employed to examine and check items and/or means of transport, workers of operating organisations and citizens visiting these facilities. The manner in which examinations and other checks are to be carried out shall be established in accordance with the law on security activities.

(3) On the site of a nuclear installation and/or storage facility or in the health protection zones of such facilities, congresses, meetings, demonstrations and also unsanctioned mass undertakings shall be prohibited.

CHAPTER 7

Emergency preparedness and emergency response

Article 25

Organisation of emergency preparedness and emergency response

(1) The organisation of emergency preparedness and emergency response shall consist of the elaboration of measures to ensure emergency preparedness and to provide an emergency response.

(2) Measures to provide emergency preparedness and an emergency response are to be elaborated in accordance with the requirements of legal enactments and shall be established in external and internal emergency plans.

Article 26

External emergency plan

(1) An external emergency plan shall establish zones of emergency response and action for Republic-level state control agencies, local government agencies, state and other organisations as well as citizens, aimed at protecting public life and health, the environment and property in the event of a radiation accident arising during activities involving the use of atomic energy. This would include the use of atomic energy at a nuclear installation and/or storage facility located outside the territory of the Republic of Belarus within one hundred kilometres of the state border.

(2) State regulatory agencies and local government agencies shall draft an external emergency plan and take measures to implement it.

(3) The Government shall adopt the external emergency plan. External emergency plan measures shall be subject to unconditional execution. The operating organisation shall, at its own expense and other sources which are not prohibited by law, maintain the level of material/technical and staff required in the external emergency plan.

Article 27

Internal emergency plan

(1) An internal emergency plan, in accordance with an external emergency plan, shall determine the actions of an operating organisation in cleaning up after, confining or reducing the consequences of a radiation accident.

(2) An internal emergency plan shall be drawn up and approved by the operating organisation in agreement with state regulatory agencies.

(3) An internal emergency plan must be approved at least six months prior to the start of the planned commissioning of a nuclear installation and/or storage facility.

(4) The drafting of an internal emergency plan, along with measures to implement it, shall be funded by the operating organisation.

(5) An internal emergency plan shall undergo a practical check prior to commissioning and during operation of a nuclear installation and/or storage facility at intervals to be established by state agencies for safety regulation in the use of atomic energy.

Article 28

Terms and procedure for drafting of emergency plans

The Government at the proposal of state regulatory agencies shall establish the terms and procedure for the drafting of emergency plans, the measures to be taken in cleaning up after, confining or minimising the consequences of a radiation accident, the methods used to inform the public and the measures to be taken to verify emergency preparedness.

Article 29

Duties of the operating organisation in ensuring emergency preparedness and emergency response

(1) The operating organisation must familiarise workers with the emergency plans and carry out special training of workers who will have duties under these plans.

(2) In the event of a radiation accident while activities involving the use of atomic energy are being performed, which has led to a release of radioactive substances into the environment at a level above the limits, the operating organisation must:

- Immediately notify the public, state regulatory agencies and local government agencies in the emergency response area and other state agencies.
- Take steps to clean up, restrict or mitigate the consequences of the radiation accident.
- Monitor the irradiation of individuals involved in cleaning up, restricting or mitigating the consequences of the radiation accident and also take steps aimed at preventing the basic irradiation dose limits for these individuals from being exceeded.
- Ensure that there is continuous monitoring of the release of radioactive substances into the environment.
- Provide the relevant state agencies, other organisations and the public in the observation zone with up-to-date information on the radiation circumstances in accordance with the emergency plans.
- Perform other duties in line with the measures envisaged in the external and internal emergency plans and this act.

(3) Irradiation of workers of the operating organisation above set fundamental irradiation dose limits may be allowed when work is carried out to clean up, restrict or mitigate the consequences of a radiation accident (but not above the effective potentially hazardous irradiation dose set by enactments). This should only be done if it is not possible to take other steps to protect the public or prevent large-scale irradiation, or where there is a threat of major radioactive contamination of the environment. The operating organisation must give prior notification to workers taking part in such activities of the potential risk of irradiation at levels exceeding set fundamental irradiation dose limits and obtain their written consent to this.

CHAPTER 8

Operating organisations and organisations carrying out work and/or providing services

Article 30

Characteristics of activities involving the use of atomic energy carried out by an operating organisation

(1) The operating organisation and the Ministry of Energy shall co-operate on matters relating to the setting of operating regimens for a nuclear power plant or a unit at such a station and operating regimes for generating and other equipment used at the nuclear power plant.

(2) Any interference in activities involving the use of atomic energy being carried out by an operating organisation that may reduce the level of nuclear safety, with the exception of cases as envisaged in legal enactments and technical enactments, shall be inadmissible.

Article 31

Funds for financing the work to maintain and improve safety of a nuclear installation and/or storage facility

(1) The operating organisation shall establish a fund with the objective of financing research, experimental design and other work to maintain and improve the safety of the nuclear installation and/or storage facility. This fund must be set up prior to commissioning of the nuclear installation and/or storage facility.

(2) The procedure for the setting up and utilisation of this fund shall be established by the President.

Article 32

Duties and responsibility of operating organisation in ensuring safety of a nuclear installation and/or storage facility

(1) An operating organisation shall draw up and put into effect measures aimed at maintaining and improving the safety of a nuclear installation and/or storage facility, in case of need set up the appropriate services to carry out safety monitoring and present information on the safety status of these facilities to state regulatory agencies at times as set by them.

(2) An operating organisation shall provide for:

- Utilisation of the nuclear installation and/or storage facility only for the intended purposes.
- The organisation and performance of work in a scope and of a quality which meet the requirements of technical enactments at all stages of the siting, planning, construction, commissioning, operation, limitation of operation, extension of life and decommissioning of a nuclear installation and/or storage facility.
- The drafting and implementation of measures to prevent radiation accidents and to mitigate their negative consequences for workers, the public and the environment.

- Safe management of nuclear materials, spent nuclear fuel and/or operational radioactive waste where workers and the public are concerned.
- The establishment and targeted use of a nuclear installation and/or storage facility decommissioning fund and a fund for financing of work to maintain and improve nuclear installation and/or storage facility safety.
- The implementation of workers' rights to social guarantees.
- Record-keeping on workers individual irradiation dose.
- The drafting and implementation of measures to protect workers and the public in the observation zone in the event a radiation accident.
- Accountancy and monitoring for nuclear materials, spent nuclear fuel and/or operational radioactive waste and other ionising radiation sources.
- Implementation of physical protection for items used in atomic energy.
- The drafting and implementation of fire safety measures at a nuclear installation and/or storage facility.
- Radiation control and radiation monitoring in the health protection zone and the observation zone.
- Selection, training, retraining and maintenance of appropriate skills levels as well as required number of workers.
- Notification of the public in the observation zone of the radiation circumstances.
- Performance of other duties required by laws.

(3) Under the law, an operating organisation shall be liable for failure to observe the safety maintenance requirements of a nuclear installation and/or storage facility.

(4) In the event that decisions are duly taken to suspend or terminate the licence conferring a right to operate a nuclear installation and/or storage facility, the Republic-level state control agency or other state organisation responsible for the facilities in question shall take steps to ensure their safety. If it proves impossible to put such a special licence back into effect, the aforementioned state agencies and state organisations shall take steps to establish another operating organisation.

Article 33

Organisations carrying out work and/or providing services

(1) Organisations carrying out design and surveys, research, experimental design, process work, the design and manufacture of equipment for nuclear installations and/or storage facilities and other work and/or services involving the use of atomic energy shall ensure that the work is carried out and/or the services are provided in a scope and of a quality which meet the requirements in technical enactments. They shall bear liability for the quality of the work performed and/or the services provided throughout the lifetime as set in the design of the nuclear installation and/or storage facility.

(2) The requirements of this act in respect of operating organisations and their obligation to maintain nuclear safety and radiation protection shall apply to the organisations referred to in the first section of this article.

Article 34

Legal status of workers

(1) Workers of operating organisations belong to the category of employees performing special work. Employment relations and discipline for workers of operating organisations shall be regulated by labour laws and by the relevant disciplinary regulation adopted by the President.

(2) Workers of operating organisations shall be subject to compulsory accident at work and occupational disease insurance including diseases caused by exposure to ionising radiation, in accordance with the law on insurance.

(3) With respect to workers as referred to in Article 33 of this act who are performing work and/or providing services directly at a nuclear installation and/or storage facility or with nuclear materials, spent nuclear fuel and/or operational radioactive waste, the requirements of sections one and two of this article shall apply as well as the requirements of Article 41 of this act.

(4) The social and routine provisions for specific categories of workers at operating organisations shall be established by law.

CHAPTER 9

Liability for damage caused by a radiation accident / Liability for breaches of the law

Article 35

Compensation for damage caused by a radiation accident

Damage caused to organisations and individuals by a radiation accident occurring during the performance of activities involving the use of atomic energy, or by a combination of such an accident with a toxic, explosive or other hazardous impact shall be subject to compensation by the operating organisation pursuant to this act and other legislation.

Article 36

Liability limit for damage caused to organisations and individuals by a radiation accident and features of compensation

(1) A liability limit for compensation for damage caused by a radiation accident shall be set by the President or, at his assignment, by the Government.

(2) The liability limit for compensation for damage caused by a radiation accident may not be lower than the minimum level established in international agreements of the Republic of Belarus.

(3) In order to provide compensation for damage caused by a radiation accident an operating organisation must have financial cover for liability. The sources for this and the amount of which shall be established by the Government, by agreement with the President, taking into account international agreements of the Republic of Belarus.

Article 37

Compensation for damage to the environment caused by a radiation accident

(1) The operating organisation shall bear liability for damage to the environment caused by a radiation accident, in accordance with the law.

(2) In the event of a complete or partial refusal by an operating organisation to compensate claims for damages to the environment caused by a radiation accident, action shall be brought for compensation by the state agency within the limits of its powers or by the public prosecutor carrying out state monitoring in the field of environmental protection.

Article 38

Liability for breaches of law

Officials of state agencies, including Republic-level state control agencies, state regulatory agencies, local government agencies and also workers at operating organisations, organisations carrying out work and/or providing services for activities involving the use of atomic energy as well as other individuals, shall bear disciplinary, administrative, criminal and/or other liability for breaches of the laws in the field of atomic energy.

CHAPTER 10

Guarantees of rights of individuals and organisations

Article 39

Rights of individuals and organisations to receive information

(1) Individuals, public associations and other organisations shall have a right to request, through a legally-established procedure, and obtain from state agencies and organisations information on the safety of nuclear installations and/or storage facilities that are scheduled for construction, being planned, constructed, operated or decommissioned, with the exception of information that is a state secret and information the dissemination or disclosure of which is restricted. Information on a radiation accident must not be categorised as a state secret or as information the dissemination or disclosure of which is restricted.

(2) Individuals, public associations and other organisations shall have a right to obtain information on radiation circumstances free of charge.

(3) Individuals who have been exposed to ionising radiation shall have a right to obtain a document on the irradiation dose received. The procedure for obtaining such a document and its form shall be established by the Government, unless otherwise stipulated by legal enactments.

Article 40

Rights of individuals and organisations to participate in policy making

(1) Individuals, public associations and other organisations shall have a right to take part in the discussion of drafts of legal enactments and targeted state programmes in the field of atomic energy.

(2) Public associations and other organisations shall have a right to put forward representatives to take part in state and other expert appraisals of nuclear installations and/or storage facilities at the stage of siting, planning, construction, operation, decommissioning or limitation of operation.

(3) Public associations and other organisations shall have a right to hold independent expert appraisals in cases and following the procedure stipulated in law.

Article 41

Rights of workers of operating organisations to social guarantees

Workers of operating organisations shall have a right to social guarantees for harmful impacts of ionising radiation on their health, and for supplementary risk factors, at the expense of the operating organisation pursuant to legal enactments establishing the types, amounts and procedure of such social guarantees as well as the sources from which their funding is to come.

CHAPTER 11

International co-operation in the field of atomic energy

Article 42

International agreements of the Republic of Belarus

If an international agreement stipulates rules, other than those envisaged in this act, the rules of the international agreement of the Republic of Belarus shall apply.

Article 43

Exchange of information with foreign states, the International Atomic Energy Agency and other international organisations in the field of atomic energy

Exchange of information with foreign states, the International Atomic Energy Agency and other international organisations in the field atomic energy shall take place in accordance with international agreements of the Republic of Belarus.

Article 44

Import and export of nuclear installations, equipment and technology, nuclear materials, spent nuclear fuel, operational radioactive waste, work and services

(1) Import and export of nuclear installations, equipment and technology, nuclear materials, spent nuclear fuel, operational radioactive waste, work and services involving the use of atomic energy, including transfer of them for display at exhibitions, performance of joint work and other purposes of a non-commercial nature, shall take place in accordance with enactments of the President, international undertakings on non-proliferation of nuclear weaponry and international agreements of the Republic of Belarus.

(2) Imports into Belarus of spent nuclear fuel and/or operational radioactive for the purpose of their storage or underground disposal shall only be permitted in respect of spent nuclear fuel and/or operational radioactive waste that was generated in Belarus.

Article 45

Notification of foreign states of a radiation accident

Notification of a radiation accident that has occurred during the performance of activities involving the use of atomic energy, and which has led to trans-border propagation of radioactive substances, shall be made by authorised state agencies in accordance with international agreements of the Republic of Belarus.

Article 46

International assistance in the event of a radiation accident

Offers of international assistance in the event of a radiation accident that has occurred during the performance of activities involving the use of atomic energy, with a view to minimising its consequences and with a view to protecting the life and health of the public, the environment and property from harmful exposure to ionising radiation, shall be made in accordance with international agreements of the Republic of Belarus.

CHAPTER 12

Final provisions

Article 47

Bringing legal enactments in line with this act

Within one year, the Council of Ministers shall:

- Draft and duly submit to the House of Representatives of the National Assembly proposals aimed at bringing legal enactments into line with this act.
- Draft and duly submit draft legal enactments establishing the forms and amounts of social guarantees for the harmful impact of ionising radiation on the health of workers of operating

organisations and for supplementary risk factors and the procedure by which they shall be made available as well as the sources from which they are to be funded.

- Bring decisions of the Government into line with this act.
- Ensure that Republic-level state control agencies that are subordinate to the Government bring their legal enactments into line with this act.
- Take other steps essential to the implementation of the provisions of this act.

Article 48

Entry into effect of this act

(1) This act shall enter into effect ten days after its official promulgation.

(2) Until legal enactments have been brought into line with this act, they shall be applied to the extent that they do not conflict with this act, unless otherwise established by the Constitution of the Republic of Belarus.

Decree of the President of the Republic of Belarus

of 12 November 2007 No. 565
on steps to be taken for the construction of a nuclear power plant[1]

(Extract)

With a view to organising preliminary work for the construction of a nuclear power plant and to ensuring nuclear safety and radiation protection, I decree as follows:

1. A state authority called the "Nuclear Installation Construction Directorate" (hereinafter referred to as "Directorate") shall be set up to perform a programme of preliminary design and surveying work for the construction of a nuclear power plant (hereinafter referred to as "NPP").

2. The following is to be established:

   2.1 The Directorate shall be a legal body subordinate to the Ministry of Energy. The Directorate shall be headed by a Director to be appointed and dismissed by the Minister of Energy in agreement with the President.

   2.2 In order to construct the NPP, the Directorate shall:

   – organise and carry out research and surveys to select a site;

   – draft designs and cost estimates;

   – organise and co-ordinate construction, assembly and other work in an orderly manner;

   prepare technical tasks and documentation for the purchase of special and power-generating equipment, work and services;

   – carry out quality control and acceptance procedures for work performed in the field of nuclear technology, geodesy, geological surveying, seismic, tectonics work as well as environmental work. Also, participate in the work to select the required project, the process flow sheet, equipment, the safety systems and other systems linked to the construction of the NPP.

   2.3 The Directorate shall be funded and equipped by the Ministry of Energy'sinnovation fund.

1. Unofficial translation by the OECD.

2.4 The charter of the Directorate and any amendments and/or additions to it shall be approved by the Ministry of Energy.

2.5 Staff of the Directorate shall be appointed by the Ministry of Energy in agreement with the Council of Ministers.

3. It is determined:

3.1 The national research and design institute Belnipienergoprom, as the organisation to co-ordinate the preparation of design and cost estimate documents for the construction of the NPP, shall:

- negotiate and conclude sub- contracts for the design and cost estimate documents;

- conclude contracts with the joint-stock company Energoproekt[2] which will perform design and engineering services for the site selection of the NPP. It will prepare comprehensive reports and documents on investment developments and the tender process for the NPP construction project.

3.2 The state scientific institute Sosny[3] at the Belarus National Academy of Sciences shall provide scientific support for construction of the NPP with personal responsibility being borne by the Chairman of the Presidium of the Belarus National Academy of Sciences.

4. The Ministry for Emergency Situations is responsible for nuclear safety and radiation protection, with personal responsibility being borne by the Minister of Emergency Situations.

In order to exercise state oversight in the field of nuclear safety and radiation protection, a Nuclear Safety and Radiation Protection Department is to be set up within the Ministry of Emergency Situations.[4]

5. Amendments and additions are to be made to several decrees of the President of the Republic of Belarus.[5]

6. The Council of Ministers shall, within six months, introduce proposals on social guarantees for both foreign employees and staff from other towns employed by the Directorate as well as persons performing design, construction, assembling and commissioning work and services to the NPP to provide them with accommodation and salary. It shall further take steps to harmonise legislation with this decree and put it into effect.

7. The State Control Committee shall monitor the implementation of this decree.

8. This decree shall enter into effect on the day it is signed.

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2 Kievskii nauchno-issledovatel'skii proektno-konstruktorskii institut – research and design institute, Kiev.

3 Ob"edinennyi institut energeticheskikh i yadernykh issledovanii –Sosny joint institute for power-generation and nuclear research.

4 See Regulation published subsequent to this Decree on page 161.

5 Editor chose not to include the details of such amendments and additions.

Regulation on the Department for Nuclear Safety and Radiation Protection of the Ministry for Emergency Situations of the Republic of Belarus[1]

of 12 November 2007

CHAPTER 1

General provisions

1. The Department for Nuclear Safety and Radiation Protection of the Ministry for Emergency Situations of the Republic of Belarus (Gosatomnadzor) is a sub-division of the Ministry with the rights of a legal person, performing special functions in the field of nuclear safety and radiation protection.

2. Gosatomnadzor shall be subject to the Constitution of the Republic of Belarus, the Regulation on the Ministry for Emergency Situations, this regulation and other legislative acts.

3. Gosatomnadzor shall have its own balance, accounts at banks, a seal and letterheads bearing the state emblem of the Republic of Belarus and its own name as well as other seals and stamps.

4. Activities of Gosatomnadzor shall be funded by the Republic's budget and other sources, subject to law.

5. The property of Gosatomnadzor shall be owned by the Republic and managed by Gosatomnadzor.

CHAPTER 2

Main tasks of Gosatomnadzor

6. The main tasks of Gosatomnadzor are:

   6.1 state oversight in the field of nuclear safety and radiation protection;

   6.2 monitoring of compliance with legislation in the field of nuclear safety and radiation protection.

1. Unofficial translation by the OECD.

CHAPTER 3

Functions and rights of Gosatomnadzor

7. Gosatomnadzor shall, in pursuit of the tasks assigned to it:

7.1 Analyse the application of the law in the field of nuclear energy, nuclear safety and radiation protection as well as draft proposals to upgrade practices.

7.2 Create a set of standards and rules in the field of nuclear energy, nuclear safety and radiation protection, to be ratified by the Ministry for Emergency Situations.

7.3 Participate in the issuing of licences by the Ministry for Emergency Situations to organisations and individual entrepreneurs to carry on activities related to ionising radiation sources, nuclear materials, radiation protection systems and process equipment for nuclear materials and ionising radiation sources.

7.4 Establish the requirements to document nuclear safety and radiation protection for a nuclear installation, radiation source, nuclear material or ionising radiation source storage facility (hereinafter referred to a storage facility) and for activities related to ionising radiation sources, nuclear materials, radiation protection systems and process equipment for nuclear materials and ionising radiation sources.

7.5 Carry out expert appraisals of nuclear installations, nuclear power plants, radiation sources and storage facilities as well as appraisals of design and construction documentation for these with or without the involvement of independent experts.

7.6 Within the scope of its competence, organise and carry on state oversight in relation to:

- compliance with licensing requirements and conditions by licensees;
- management of radioactive waste and spent nuclear fuel and their reprocessing, disposal and excavation;
- physical protection of nuclear materials and installations, radiation sources and storage facilities;
- protective measures to ensure the safety of workers and the public in the event of a nuclear and radiation accidents;
- compliance with requirements of legal enactments and technical legal enactments in the field of nuclear safety and radiation protection during the planning (design), manufacture, storage, assembling, operation and decommissioning of equipment and systems for nuclear installations, nuclear power plants, radiation sources and storage facilities.

7.7 Organise scientific studies to maintain the principles and criteria on nuclear safety and radiation protection, to improve the efficiency of state oversight and involve both national and foreign scientific organisations, scientists and specialists.

7.8. Duly examine and submit proposals for draft programmes to conduct research and design aimed at demonstrating and improving the safety of nuclear installations, nuclear power plants, radiation sources and storage facilities that are being designed, constructed, reconstructed or operated.

7.9. Verify computer programmes, set up and run databases for safety analysis of nuclear installations, radiation sources and storage facilities. Ensure the functioning of a state system of nuclear materials accountancy and monitoring, a single state system of ionising radiation source accountancy and monitoring and a physical protection system for nuclear materials and installations, nuclear power plants, radiation sources and storage facilities.

7.10 Set up the requirements for the content and procedure when reporting violations in the operation of radiation facilities, nuclear installations and nuclear power plants to Gosatomnadzor.

7.11 Set up procedures to investigate the circumstances and causes that have lead to violations in the operation of radiation facilities, nuclear installations and nuclear power plants. Carry out these investigations.

7.12 Draft requirements and conditions to prevent any possibility of acts of terrorism being perpetrated at radiation facilities, nuclear installations, nuclear power plants or storage facilities.

7.13 Participate in operations to certificate equipment, items and processes for nuclear installations, nuclear power plants, radiation sources and storage facilities.

7.14 Publish legal enactments and information, reference and other documents required for the performance and upgrading of activities in the field of nuclear safety and radiation protection.

7.15 Organise professional training, retraining, skills upgrading and probation work for Gosatomnadzor employees.

7.16 Draft for Republic-level state agencies, local executive and management agencies and other organisations, proposals on matters related to improving the functioning of radiation facilities, nuclear installations and nuclear power plants.

7.17 Participate in the work of commissions engaged in preliminary, regular and initial testing of equipment and technical systems used at radiation facilities, nuclear installations and nuclear power plants. Engage special commissions to select radioactive waste storage locations.

7.18 Monitor compliance with requirements of standards and rules in the field of nuclear energy.

Ensure compliance with the international obligations of Belarus with regard to nuclear safety and radiation protection.

Organise and carry on professional training, retraining and skills upgrading at radiation and nuclear installations with the aim to safely perform work.

Implement measures to improve the accident prevention provisions and the safe operation of radiation facilities, nuclear installations and nuclear power plants.

7.19 Inform the public in accordance with the law on the safety of radiation facilities, nuclear installations and nuclear power plants.

7.20 Draft and submit to the Ministry for Emergency Situations:

- A procedure to verify the knowledge of managers and specialists at organisations and individual entrepreneurs working with ionising radiation sources, at nuclear installations and at nuclear power plants of the laws in the field of nuclear safety and radiation protection .

- Procedures for those carrying out work and services in the field of nuclear energy and issuing licences for activities related to the manufacture, use, reprocessing and storage of nuclear materials.

- Planning (design), manufacture, storage and assembly of ionising radiation sources, radiation protection systems and process equipment for nuclear materials and ionising radiation sources.

- Proposals for the co-ordination of activities of Republic-level state agencies, local executive and management agencies and other organisations to ensure nuclear safety and radiation protection.

- Proposals for the preparation of the annual report to the Council of Ministers on the protection of the public and the environment from natural and man-made emergency situations.

7.21 Within the limits of its competence, protect information on state secret.

7.22 Monitor the work of Republic level state agencies and other state organisations subordinate to the Government on matters related to radiation protection and monitor the performance of officials in carrying out the duties assigned to them.

7.23 Give due consideration to requests by organisations and citizens on matters that fall within its competence.

7.24 Carry out other functions as envisaged by law.

8. In order to carry out its tasks and functions, Gosatomnadzor shall have a right:

- to draw up and submit to the Ministry of Emergency Situations proposals on matters falling within its competence, including draft legal enactments and draft technical enactments;

- to recruit experts to participate in the performance of appraisals and inspections at radiation facilities, nuclear installations and nuclear power plants;

- to commission scientific organisations, higher education institutions and other organisations to draft comprehensive and special programmes as well as to prepare drafts

of legal enactments and technical enactments in the field of nuclear safety and radiation protection;

- to carry on international trade activities in compliance with the law;

- to request and receive information from state agencies and other organisations on matters falling within its competence;

- to issue mandatory orders to organisations and individual entrepreneurs operating ionising radiation sources, nuclear installations and nuclear power plants with a view to avoid violations in the field of nuclear safety and radiation protection;

- to enforce other powers in line with its tasks and functions.

CHAPTER 4

Organisation of Gosatomnadzor activities

9. Gosatomnadzor shall be headed by a director appointed to the post and dismissed from it by the President as advised by the Minister for Emergency Situations.

The director of Gosatomnadzor shall have deputies, including one first deputy, appointed to the post and dismissed from it by the Minister for Emergency Situations as advised by the director of Gosatomnadzor and subject to agreement with the Council of Ministers.

10. The director of Gosatomnadzor shall:

10.1 be subordinate to the Minister for Emergency Situations;

10.2 manage the activities of Gosatomnadzor and bear personal responsibility for the implementation of the tasks and functions allocated to it;

10.3 within the limits of its competence, issue orders and ratify regulations on structural sub-divisions of Gosatomnadzor;

10.4 delegate duties to deputies and set the powers of Gosatomnadzor officials;

10.5 appoint and dismiss Gosatomnadzor employees, apart from Gosatomnadzor deputy directors;

10.6 represent Gosatomnadzor's interests *vis-à-vis* state agencies and other organisations;

10.7 within the limits set by the Ministry for Emergency Situations, dispose of the property of Gosatomnadzor (including money) and act without power of attorney on behalf of Gosatomnadzor and open accounts at banks;

10.8 give incentives and impose disciplinary requirements on Gosatomnadzor employees;

10.9 ensure that Gosatomnadzor employees observe discipline at work and apply measures aimed at improving safety conditions at work and rest and in everyday life;

10.10 monitor the implementation of decisions taken by the Ministry for Emergency Situations;

10.11 exercise other powers within the limits of his competence.

11. A board shall be set up at Gosatomnadzor comprising seven people (namely the director of Gosatomnadzor (chairman of the board), his deputies and other Gosatomnadzor management employees) for collective discussion of the most important matters.

The regulation on the Gosatomnadzor board and the composition of its members shall be ratified by the Ministry for Emergency Situations as advised by the director of Gosatomnadzor.

Decisions of the board with regard to public relations on certain activities which require normative action shall be drafted as a protocol and submitted to the Ministry for Emergency Situations which shall issue the appropriate resolutions and orders. Board decisions on other matters shall be put into effect through orders of the director of Gosatomnadzor.

In the event of disputes arising between the director of Gosatomnadzor and board members, a decision shall be taken by the director of Gosatomnadzor, with a report on this decision being sent to the Minister for Emergency Situations. Board members may inform the Minister for Emergency Situations of their stance.

12. Commissions, councils and other advisory bodies may be set up at Gosatomnadzor to consider matters falling within its competence.

Resolution of the Security Council of the Republic of Belarus

No. 1 of 31 January 2008, Minsk

on the development of nuclear power generation in the Republic of Belarus

With the objective of developing nuclear power generation in the Republic of Belarus, the Security Council has resolved as follows:

1. To implement construction of a nuclear power plant (hereinafter referred to as NPP) with a total electrical power rating of 2 000 MW, with commissioning of the first power-generating unit in 2016 and the second in 2018.

2. The Council of Ministers shall:

   - duly notify the International Atomic Energy Agency of the decision taken to construct a NPP;

   - co-operate with the National Bank of the Republic of Belarus to compile a scheme, identify funding sources for the NPP construction project and report to the President by 1 January 2009;

   - co-operate with the National Academy of Sciences of the Republic of Belarus to implement the basic plan for the preparatory work necessary for the construction of the NPP and report on progress achieved in 2008 to the Head of State;

   - ensure that the NPP is built within the time frame set in point 1 of this resolution.

3. The implementation of this resolution is to be monitored by the Committee for State Control of the Republic of Belarus.

Spain

Act Creating the Nuclear Safety Council

Act 15/1980 of 22 April, Creating the Nuclear Safety Council, amended by Act 33/2007 of 7 November

Preliminary note

The content of this act has been partially amended since it was enacted, by means of successive legislative decrees, whose derogations, or express alterations, or rephrasing, are officially recorded through the inserted footnotes.

The last that entailed a true reform was, Act 33/2007 November, which amended Articles 1, 2, 3, 4, 5, 6, 7, 8 and 11, giving them a new phrasing.

This act had been previously modified by:

- Act 14/1999 of 4 May 1999, on Fees and Public Prices for services rendered by the Nuclear Safety Council.

- Act 34/1998 of 7 October 1998 on the Hydrocarbons Sector.

  On the other hand, it is worth mentioning that the act has already been affected by the following regulations:

- Royal Decree 1339/1999 of 31 July 1999, establishing the Regulation of the National Energy Commission *[Comisión Nacional de Energia (CNE)]*, which develops the compensation package corresponding to the Chairman, Commissioners and Secretary General of the Nuclear Safety Council, as amended by Royal Decree 1204/2006 of 20 October.

- Royal Decree 1554/2004, of the Ministry of Industry, Trade, and Tourism (today the Ministry of Industry, Tourism and Trade), developing its basic organisational structure. Specifically, the fourth additional provision states that the Nuclear Safety Council interacts with the Government through the Ministry of Industry, Tourism and Trade.

- Royal Decree 562/2004 of 19 April 2004, of the Government, approving the basic organisational structure of ministry departments.

Act 15/1980 of 22 April 1980, creating the Nuclear Safety Council, amended by Act 33/2007 of 7 November 2007

DON JUAN CARLOS I, KING OF SPAIN

Be it known to all concerned
that the Cortes Generales have enacted, and we hereby grant our assent to the following act:

Preamble

The creation of the Nuclear Safety Council, by Act 15/1980 of 22 April, as the sole body competent in nuclear safety and radiation protection matters, independent from the central administration of the state, represented a fundamental milestone in the development of nuclear safety in Spain, and allowed to put the Spanish nuclear energy regulatory framework at a level comparable with the most advances countries in this field.

Although some aspects of this act have been modified – mainly by Act 14/1999 of 4 May, on Fees and Prices Charged to the Public for Services Rendered by the Council for Nuclear Safety –, the time elapsed since it was enacted called for an update to take into account the experience built up during this period of time, incorporate certain amendments to its articles which have been implemented over time, adapt it to growing social sensitivity regarding environmental issues and to introduce and develop some aspects with the aim of ensuring the preservation of its effective independence and strengthening the transparency and effectiveness of the organisation.

Bearing in mind the functions with which the Nuclear Safety Council has been entrusted with, it is essential that its actions should have the necessary credibility and trust of that very society which it has the mission to preserve from undesired effects of ionising radiation.

To that end, appropriate mechanisms need to be established enabling the Nuclear Safety Council operations to operate under the condition of transparency needed as to promote that trust. In line with the provisions of the Aarhus Convention, ratified by Spain on 15 November 2004 and enshrined in Act 27/2006 of 18 July, regulating rights of access to information, public participation and access to courts in environmental issues.

The definitions in the regulatory instruments of the Nuclear Safety Council are developed, its role regarding physical protection of materials and nuclear and radioactive facilities is reinforced, and in order to ensure the required independence, the requirements that have to be fulfilled when contracting external services are specified.

Furthermore, with regard to the essential objective of ensuring nuclear and radioactive facility operate under the safest possible conditions, it establishes the obligation of workers to report any fact that could compromise their safe operation and protects them against possible reprisals.

Finally, this act considers the setting up of an Advisory Committee, as an advisory and consultative body, open to the participation of representatives from institutional, regional, scientific, technical, business, trade union and environmental bodies, whose mission will be to make recommendations to the Nuclear Safety Council in order to enhance transparency, access to information and public involvement in matters within its competence.

Single Article

Modification of Act 15/1980 of 22 April Creating the Nuclear Safety Council

Article 1

1. The Nuclear Safety Council is created as a body under public act, independent of the central state administration, with its own legal personality and its own assets, independent from those of the state, as the only competent body in matters pertaining to nuclear safety and radiological protection.

   It shall be governed by its own statute, prepared by the Council and approved by the Government, whose text shall be submitted to the competent Committees of the Congress and the Senate before its publication, with respect to such specific provisions as apply to it, without prejudice to additional application of legal principles of the ordinary act or special legislation.

2. The Council shall prepare the preliminary draft of its annual budget according to the provisions included in the General Budgetary Law, and shall remit it to the Government for its incorporation into the general state budgets.

Article 2

The functions of the Nuclear Safety Council shall be as follows:

a) To propose to the Government such regulations regarding nuclear safety and radiological protection as may be necessary, as well as such revisions that it considers advisable. These regulations shall include objective criteria for the selection of sites for nuclear and first category radioactive installations, following reports from the Autonomous Communities, in the manner and within the time limits determined by regulations. Similarly, it may prepare and approve the instructions, circulars and guides of a technical nature, relative to nuclear and radioactive installations and for those activities related to nuclear safety and radiological protection.

   Instructions are technical standards on nuclear safety and radiological protection issues, which will be binding for the parties falling within their scope of application, once notified or, if applicable, published in the *Official State Gazette*. Involvement of stakeholders and the public in the preparation of Council instructions will be promoted in the terms provided by Act 27/2006 of 18 July, regulating rights of access to information, public participation and access to justice in environmental issues. Instructions will be submitted to the Congress of Deputies prior to their approval by the Council.

   Circulars are technical documents of an information nature which the Council may address to one or more parties falling within their scope of application, in order to inform them of events or circumstances related to nuclear safety or radiological protection.

   Guides are technical documents of advisory nature whereby the Council may provide guidance to the affected parties in relation to current regulations on nuclear safety and radiological protection.

Additionally, the Nuclear Safety Council may forward supplementary technical instructions directly to the holders of the authorisations to which Section b) of this article refers to ensure that safety conditions and requirements are met.

b) To issue reports to the Ministry of Industry, Tourism and Trade on nuclear safety, radiological protection, and physical protection, prior to the adoption of the resolutions as this body may approve on matters related to the grant of authorisations for nuclear and radioactive installations, transport of nuclear substances or radioactive materials, the manufacture and official approval of equipment containing radioactive sources or generating ionising radiation, the exploitation, restoration or closure of uranium mines, and in general, all activities related to the handling, processing, storage and transportation of nuclear and radioactive substances.

To issue reports, prior to resolutions of the Ministry of Industry, Tourism and Trade, regarding the authorisation of companies that provide technical assistance for X-ray equipment and installations for medical diagnosis, and other equipment destined for radioactive installations, and to carry out the inspection and control.

To issue the reports prior to the resolutions that are enacted in exceptional cases and circumstances by the Ministry of Industry, Tourism and Trade, on its own initiative or at the request of the Nuclear Safety Council, in relation to the removal and safe management of radioactive materials.

Such reports shall be mandatory in all cases, as well as binding, when they be of an adverse nature or deny authorisation for concessions, as well as with regard to the conditions that they establish if they are positive.

The procedures which require the issue of the reports referred to in this section, may be suspended by the body competent for the decision concerned, exceptionally, and indefinitely, until they are issued or for the period of time considered appropriate to allow their issue subject to justification of the reasons for suspension.

c) To carry out all types of inspections in nuclear or radioactive installations, during the different project, construction and commissioning stages, in transportation, production and certification of equipment comprising radioactive sources or generating ionising radiations, and the approval or validation of packages intended for use in the transport radioactive substances, in order to ensure compliance with the applicable legislation and the conditions imposed in the corresponding authorisations, with the power to halt construction projects or activities when anomalies are detected that affect safety, and until they are corrected, and shall propose the cancellation of the authorisation if these anomalies cannot be corrected.

d) To carry out inspection and control of nuclear and radioactive installations during their operation, and until their closure, in order to ensure compliance with all established standards and conditions, both of a general and specific nature, established for the installation, in order to ensure that the operation of the aforementioned installation does not give rise to undue risks to persons or the environment. The Nuclear Safety Council has the authority to suspend the operations of installations or of the activities that they perform, for safety reasons.

e) To propose the initiation of such disciplinary proceedings it considers pertinent within the scope of its competences, according to the applicable legislation.

Furthermore, when initiating a disciplinary proceeding in matters relating to nuclear safety and radiological protection, the Nuclear Safety Council shall issue a report, of a mandatory nature, within three months, to analyse properly the events that are the object of the proceeding. This report shall be presented when the proceeding is initiated at the instances of another body, or in the case where, having been initiated as a result of a reasoned request from the Nuclear Safety Council itself, data other than that released by that body are included in that proceeding.

f) To collaborate with the competent authorities in the elaboration of the criteria with which the off-site emergency plans and those for the physical protection of nuclear and radioactive installations, as well as transportation, must comply. Once these plans are formulated it shall participate in their approval.

To co-ordinate, in all those aspects related to nuclear safety and radiological protection, measures for assistance and response to emergency situations, integrating and co-ordinating the different bodies and public or private companies whose participation may be necessary for the implementation of the functions attributed to this body.

Furthermore, to carry out whatever other activities in emergency matters that may be assigned to it in the applicable regulations.

g) To control the measures for the radiological protection of workers that are exposed in the course of their work, as well as the public and the environment. To monitor and control the doses of radiation received by the operating personnel and the offsite radioactive material discharges from nuclear and radioactive installations, as well as their incidence, specific or cumulative, in the areas of influence of these installations.

To assess the environmental radiological impact of nuclear and radioactive installations and those activities that involve the use of ionising radiation, according to the provisions of the applicable legislation.

To control and monitor the radiological quality of the environment throughout the national territory, in compliance with the international obligations of the Spanish State in this matter, without prejudice to the competencies that the different public administrations may have been entrusted to.

Similarly, to co-operate with the competent authorities in matters relating to environmental radiological supervision beyond the areas of influence of the nuclear or radioactive installations.

h) To collaborate with competent authorities on programmes for the radiological protection of people subjected to medical diagnosis or treatment procedures with ionising radiation.

i) To award, and when necessary, revoke authorisations to entities or companies that offer services in the field of radiological protection, as well as exercise inspection and control of the aforementioned entities, companies, services and authorised centres in matters of nuclear safety and radiological protection.

To collaborate with the competent authorities in relation to monitoring the health of workers that are professionally exposed as well as medical care of people potentially affected by ionising radiations.

To create and maintain the Register of External Companies for owners of nuclear or radioactive installations with workers classified as occupationally exposed, and to monitor or inspect the aforementioned companies insofar as it sees fit.

j) To issue, at the request of an interested party, statements of favourable assessment regarding new designs, methodologies, simulation models or verification protocols related to nuclear safety and radiological protection.

k) To inform the Ministry of Industry, Tourism and Trade on concentration or activity levels, for their consideration as radioactive waste, involving materials that contain or comprise radioactive substances, and for which no use is envisaged.

l) To grant and renew, based on the conduct of the tests established by the Council itself, the licenses for operators and supervisors of nuclear or radioactive installations, the Diplomas for Heads of Radiological Protection Services, and accreditations to manage or operate X-ray facilities intended for medical diagnosis.

Likewise, to grant official approval for training and advanced training programmes and courses dealing specifically with matters of nuclear safety and radiological protection which qualify people to manage or to operate radioactive installations and the equipment of the X-ray installations destined for medical diagnosis, and to perform the functions of Head of Radiological Protection Services.

ll) To carry out the studies, evaluations, and inspections of the plans, programmes and projects necessary in all the phases of radioactive waste management.

m) To advise, whenever it is required to do so, the courts and organs of the public administration in matters relating to nuclear safety and radiological protection.

n) To maintain official relationships with similar foreign bodies, and to participate in international organisations with competence in the field of nuclear safety and radiological protection.

Similarly, it shall collaborate with international bodies or organisations in programmes of assistance on matters of nuclear safety and radiological protection, taking part in their execution, either directly, or by contracting third parties or entities for this end, always in compliance with the conditions determined by these organisations.

ñ) To keep the public opinion informed on matters of its competence, to the extent and with the frequency that the Council determines, without prejudice to the publicising of its administrative actions as required by law.

o) To be informed by the Government and to advise the Government regarding commitments to other countries or international organisations on nuclear safety and radiological protection, which shall be taken into account in the exercise of the functions that are attributed to the Council by this act.

p) To set-up and monitor research plans within the field of nuclear safety and radiological protection.

q) To gather accurate information, and to assist when required on health conditions that could affect people due to ionising radiations derived from the operation of nuclear or radioactive installations.

r) To inspect, assess, control, propose, and adopt, if necessary, keeping competent authorities informed, as many preventive and corrective measures as are considered to be necessary in exceptional or emergency situations that may arise and which could compromise nuclear safety and radiological protection which originate in facilities, equipment, companies or activities that are not bound to the scheme of authorisations established by nuclear legislation.

s) To file and keep the documentation which holders of licenses to operate nuclear facilities are required to submit to the Nuclear Safety Council on permanent cessation of activities, and prior to transfer of ownership, and to the grant of the authorisation to decommission the facility.

t) To collaborate with competent authorities in undertaking nuclear safeguard inspections pursuant to the commitments assumed by the Spanish State.

u) Any other that in the field of nuclear safety and radiological protection is legally entrusted to it.

Article 3

1. The processing of the proceedings and the concession of the necessary authorisations for nuclear and radioactive installations, for the transportation of nuclear substances or radioactive materials, and for the production of nuclear or radioactive components corresponds to the Ministry of Industry and Energy, without prejudice, if the case arises, to whatever is established in the respective statutes of the Autonomous Communities.

2. The prior authorisation, or the authorisation for the site, the construction and the provisional and final operating permits for nuclear and first category radioactive installations, as well as their dismantling, shall be awarded by the Minister of Industry and Energy, and the remainder by the Director General of Energy, without prejudice, if the case arises, of whatever is established in the respective statutes of the Autonomous Communities.

3. Regarding site authorisations, the Ministry of Industry and Energy shall require, for its ulterior delivery to the Nuclear Safety Council, the report of the Autonomous Communities, pre-autonomous bodies, or in their defect, the interested provinces, prior to the request for the Council's report. These bodies' report shall pronounce itself on the suitability of the proposal in terms of the existing standards and regulations, and in their case, regarding the competencies that have been attributed to them, incorporating the prior reports of the affected municipalities relating to their competencies with respect to the regulation of land and the environment.

4. In the cases that the present article contemplates, the Government shall be entitled to make use of the faculties foreseen in paragraph 2 of Article 180 of the Act on the Legal Status of Land Use and Urban Planning. The authorisations or licences whose award corresponds to any of the public administrations cannot be denied or conditioned for safety reasons whose appreciation corresponds to the Council.

Article 4

1. The Nuclear Safety Council shall consist of a Chairman and four Commissioners.

2. The legal framework of the Nuclear Safety Council shall comply with provisions of its statute and additionally the provisions in Chapter II, Title II of Act 30/1992 of 26 November on the Legal Regime of Public Administrations and Ordinary Administrative Procedure, as regards the system of adoption of decisions.

3. The relationship between the Plenary Meeting of the Nuclear Safety Council, as managing collegiate body thereof, and the Presidency is one of competence, and neither shall be hierarchically subordinated to the other. The relationships between the two governing bodies shall be ruled by principles of co-operation, deliberation and respect for the legitimate exercise of the competences of the other body.

4. The Council, upon recommendation of any of its members, shall appoint a Vice-chairman from among the Commissioners, who shall substitute the Chairman in case of absence, vacancy or illness.

5. The Council shall be assisted by a General Secretariat consisting of the administrative and legal bodies required for the accomplishment of its goals shall depend, as well as overseeing those internal or external technical bodies provided by the Statutes. The Secretary General will act as Secretary to the Council.

Article 5

1. The Chairman and Commissioners of the Nuclear Safety Council shall be chosen from among persons of acknowledged standing in the matters entrusted to the Council and with expertise in nuclear safety, technology, radiological and environmental protection, medicine, law or whatever other related field related as well as within the energy sector in general or industrial safety, particular importance being attached to their independence and objectivity.

2. They shall be appointed by the Government, on the proposal of the Minister of Industry, Tourism and Trade, following the appearance of the person proposed for the position before the corresponding Commission of the Congress of Deputies in accordance with the Rules of Procedure of the Congress. The Congress, through the competent Committee and with the agreement of three-fifths of its members, shall indicate its acceptance or reasoned veto, within one calendar month from the date of reception of the relevant communication.

   Once this deadline has elapsed without an express decision from the Congress, the corresponding appointments shall be deemed as accepted.

   The period of tenure shall be six years, with the possibility of re-appointment, by the same procedure, for a second six-year period at the most. Persons over seventy years of age shall not be appointed as Chairman or Commissioners.

3. The Secretary General of the Council, and the heads of any other technical body provided by the statutes shall be appointed by the Government on the proposal of the Minister of Industry, Tourism and Trade, subject to a favourable Council Report. No person over 70 years of age

shall be eligible for the position of Secretary General of the Council, or any other Secretary General position provided in the statutes.

Article 6

The positions of Chairman, Commissioners and Secretary General of the Nuclear Safety Council and any other technical body provided by the statute, are incompatible with any other position or function, remunerated or otherwise, and, for the entire duration of their mandate or position, they shall receive exclusively, the remuneration established commensurate with their function. Upon termination of their office and for the two following years they shall not engage in any professional activity related to nuclear safety and radiological protection. The financial compensation reflecting this limitation shall be determined by regulation.

Article 7

1. The term of office of the Chairman and Commissioners of the Nuclear Safety Council shall terminate for the following reasons:

   a) On their reaching seventy years of age.

   b) At the end of their term of office.

   c) At their own request.

   d) On the occurrence of any one of the incompatibilities established in this act.

   e) By a decision of the Government, following the same procedure established for their nomination, when they are considered incapable of carrying out their functions or because they have ceased to attend to the duties of their position diligently.

   The Congress of Deputies, through the competent Committee and with the agreement of three-fifths of its members, shall urge the Government to dismiss the Chairman and Commissioners at any time.

   When the term of office of the Chairman and Commissioners is terminated upon completion of the period for which they were appointed, they shall continue to undertake their duties until their successors take up on their functions. The Congress, through the relevant Committee, shall confirm the extension if it exceeds six months.

2. When a Commissioner resigns for one of the causes listed above, except for that referred to in letter b) of the previous number, a new Commissioner shall be appointed, according to the established procedure, for the period remaining until the end of the mandate of the resigned Commissioner.

Article 8

1. The technical personnel of the Nuclear Safety Council shall be made up of staff of the Nuclear Safety and Radiological Protection Agency. The system of entry, filling of vacancies,

promotion, mobility and other rights and duties of the of the staff of this special body will be the same as that for staff of the central state administrations, taking into account the functional scope of said body.

2. The Council, under the regulations established in the statute, shall contract the services of staff, companies and organisations for specific work or studies, provided that they are not related in any way to the people assigned by the services contracted. Workers that do not belong to the Nuclear Safety Council shall in no case take direct part in the decision making process regarding ongoing administrative proceedings. The Nuclear Safety Council shall establish the means necessary to ensure that externally contracted staff, companies, and organisations always comply with the independence obligations required while rendering their services.

Article 9

The assets and economic resources which the Council shall have at its disposal for the accomplishment of its functions shall be the following:

a) Those proceeding from the collection of the fee created by this present act.

b) The assignations that are established annually in the General State Budgets.

c) Whatever others can legally be attributed to it.

Article 10[1]

Article 11

The Nuclear Safety Council shall keep the Government, the Congress of Deputies and the Senate informed in a timely manner of any circumstance or event affecting safety at nuclear and radioactive facilities, or environmental radiological quality of the environment at any place in the national territory, along with any Governments and Parliaments of the autonomous regions concerned.

As regards the Congress of Deputies and the Senate, this information shall be channelled through an *ad hoc* parliamentary panel or committee, to which a report on compliance with all resolutions enacted by the Chambers for whose execution the Nuclear Safety Council is responsible. This parliamentary panel or committee shall request Council officers and officials to appear before it as many times as it deems appropriate. In its turn, the Plenary Meeting of the Council may also request to appear before the same panel or committee to report any issue within its competence that it deems of interest to the two Houses.

The Nuclear Safety Council shall submit an annual report on its activities to both Houses of the Spanish Parliament, and to the Parliaments of those Autonomous Communities whose territory hosts nuclear facilities.

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1. Single repealing provision of Act 14/1999, of 4 May, on Public Prices and Fees for services rendered by the Nuclear Safety Council, states that "Any provision that contravene that established in this act is repealed and, in particular, Article 10 of Act 15/1980, creating the Nuclear Safety Council, and Royal Decree 3229/1982, of 12 November, regulating the fee for the services rendered by the Nuclear Safety Council".

Article 12

The access to information and public participation in relation to Council competences referring to nuclear safety and radiological protection, shall be governed by the provisions of Act 27/2006 of 18 July, regulating rights of access to information, public participation and access to courts in environmental issues.

Article 13

1. Natural or legal persons in service at nuclear and radioactive facilities, irrespective of the employment and contractual relationship binding them to the latter, shall notify license holders of any known event which affects or which might affect safe operations thereof, and the fulfilment of current legislation on nuclear safety or radiological protection.

   Should licence holders fail to undertake corrective measures diligently, the said persons shall notify the Nuclear Safety Council.

2. Employers taking reprisals against workers reporting any safety related event to the Nuclear Safety Council shall be sanctioned in accordance with the provisions of nuclear energy legislation.

3. The administrative mechanisms needed to provide for the exercise of this right shall be developed by regulations.

4. The exercise of this right shall not give rise adverse consequences for the worker in his/her position, unless he/she is proven to have acted in bad faith.

Any decision made by the licensee detrimental to, or to the prejudice of any labour rights of workers who have exercised the right provided in this article, shall be deemed as null and void.

Article 14

The Nuclear Safety Council shall provide access to information and facilitate involvement in its operation to citizens and the civil society. To that end:

1. It shall keep citizens informed of all relevant facts related to the operation of nuclear and radioactive facility, especially matters related to safe operation, radiological impact on people and the environment, events and incidents taking place therein, as well as the corrective measures taken to prevent a recurrence of such events. In order to facilitate access to the information, the Nuclear Safety Council shall employ information and communications technologies.

2. It shall provide information on all Council decisions, clearly stating the subjects and motives for the decision and the results of the voting.

3. It shall submit instructions and technical guides for public discussion during the preparation stage, making extensive use of the Nuclear Safety Council corporate website in order to facilitate public access.

4. It shall promote and take part in information forums in the areas surrounding nuclear facilities, in which issues related to their operation may be addressed, especially in relation to preparedness for emergency situations and the analysis of the events that have occurred.

Article 15

1. An Advisory Committee for public information and involvement regarding nuclear safety and radiological protection shall be created, chaired by the Chairman of the Nuclear Safety Council, whose mission will be to issue recommendations for the Nuclear Safety Council in order to increase transparency, access to information and public involvement in matters within its competence.

   The recommendations of the Advisory Committee shall not be binding for the Nuclear Safety Council.

2. This Advisory Committee shall be comprised by the following members, which shall be appointed by the Chairman of the Nuclear Safety Council:

   a) a representative nominated by the Ministry of Industry, Tourism and Trade;

   b) a representative nominated by the Ministry of Health and Consumer Affairs;

   c) a representative nominated by the Ministry of the Interior;

   d) a representative nominated by the Ministry of the Environment;

   e) a representative nominated by the Ministry of the Education and Science;

   f) a representative nominated by each of the Autonomous Communities hosting nuclear facilities within their territory, or which have established management agreements with the Nuclear Safety Council;

   g) a representative nominated by the Spanish Federation of Municipalities and Provinces and a representative nominated by the Association of Municipalities Affected by Nuclear Power Plants;

   h) two representatives nominated by the Spanish Electricity Industry Association;

   i) a representative nominated by ENRESA and another nominated by ENUSA;

   j) a representative nominated by each of the two largest nationwide labour organisations;

   k) a representative nominated by each of the two largest national non-governmental organisations, whose object is to protect the environment and sustainable development;

   l) five national or foreign experts, who shall be independent and of acknowledged standing in scientific, technical, economic or social spheres, or in information and communications.

   Ministry representatives shall at least have the rank of Deputy Director General, or equivalent.

3. The Advisory Committee shall obtain from the Nuclear Safety Council all information it considers necessary to exercise its function.

4. The system of decisions and operating standards of the Advisory Committee shall be regulated by the Statute of the Nuclear Safety Council.

5. The Government is authorised to modify the composition of this Advisory Committee by Royal Decree.

First Additional Provision

For the purposes of this act, the definitions included in Article 2 of Act 25/1964 of 29 April, on Nuclear Energy shall apply as well as the following:

1. First category radioactive installations are:

   a) Factories for the production of uranium, thorium and their compounds.

   b) Factories for the production of natural uranium fuel elements.

   c) Facilities using radioactive sources with industrial irradiation purposes.

   d) Complex facilities handling very large inventories of radioactive substances, or where radiation beams of very high energy fluency are produced, to an extent such that the potential radiological impact of the facility is significant.

2. Second category radioactive installations are:

   a) Installations where radioactive nuclides are handled or stored, which can be used for scientific, medical, agricultural, commercial or industrial use, and whose total activity is equal or exceeds a thousand times the exemption activity established by regulations.

   b) Installations that use X-ray generating machines that can function with a peak tension superior to two hundred kilowatts

   c) Particle accelerators and installations where neutron sources are stored.

Provided that there are no grounds for their classification as first-class radioactive installations.

3. Third category radioactive installations are:

   a) Installations where radioactive nuclides are manipulated or stored, whose total activity exceeds the exemption activity established by regulations and is lower than a thousand times said exemption activity.

   b) Those installations that use X-ray generating machines, whose peak tension is less than two hundred kilowatts.

Second Additional Provision[2]

Third Additional Provision

The Nuclear Safety Council can assign to the Autonomous Communities the performance of the functions that are attributed to it, according to the general principles that the Council agrees on for their implementation.

Fourth Additional Provision

The functions and faculties attributed to the Nuclear Safety Council by this act, in reference to nuclear and radioactive facilities, shall be carried out in the same terms with respect to the experimental devices and facilities defined in Article 2 of the Nuclear Energy Act, Act 25/1964 of 29 April, unless a more specific regulation were legally established for such experimental devices and facilities.
Fifth Additional Provision *Amendment of Chapter XIV of the Nuclear Energy Act* Chapter XIV of Act 25/1964 of 29 April on Nuclear Energy, reads as follows:

Chapter XIV

Regarding infringements and sanctions in nuclear matters

Article 85 Liable Persons

Without prejudice to any civil, criminal or any other type of liability, and the material responsibility resulting from the commission of punishable acts, the owner of the facility or person for the activity shall be deemed as responsible for fulfilling its duties surveillance and control duties.

Article 86 Infringements

Any action or omission constituting failure to fulfil or comply with provisions of this act, Act 15/1980 of 22 April, creating the Nuclear Safety Council and its implementing regulations, as well as in treaties and conventions entered into and ratified by Spain shall be construed as an administrative infringement.

According to their gravity, infringements are classified as very grave, grave and minor.

a) The following are very grave infringements:

    1. The exercise of any activity regulated by this act or its implementing regulations without having obtained the mandatory permit, or after its expiry, suspension or revocation where such exercise results in grave danger to the safety or health of persons or serious harm to material objects or the environment.

2. Its content has been tacitly repealed by Articles 89 and 91 of Act 25/1964 of 29 April on Nuclear Energy, by the new phrasing given thereto by Act 33/2007 of 7 November, which comes to add a New Additional Provision, the fifth, to Act 15/1980 of 22 April.

2. Failure to comply with an order of the Nuclear Safety Council, its agents or other competent authority, to cease in any ongoing activity, or to shut down operations in the nuclear or radioactive facility concerned.

3. Failure to fulfil the terms, limits or conditions attached to the authorisations, as well as failure to apply technical, administrative, or any other type of measures imposed on an activity or the operation of facility, or failure to comply with the deadlines set for their implementation, which gives rise to a grave danger to the safety or health of persons, or serious harm to material objects or the environment.

4. Failure to comply with instructions issued pursuant to the aforementioned authorisations or licenses, which gives rise to a grave danger to the safety or health of persons, or serious harm to material objects or the environment.

5. Failure to adopt technical, administrative or any other type of measure required to correct deficiencies in the activity known to the licensee, which gives rise to a grave danger to the safety or health of persons, or serious harm to material objects or the environment.

6. Operation of nuclear or radioactive facilities, or handling of radioactive materials without having the staff holding the required license, diploma or accreditation for managing or executing the operations, which gives rise to a grave danger to the safety or health of persons, or serious harm to material objects or the environment.

7. Failure by licensed staff to carry out their duties of fulfil the terms and conditions attached to the licence, which gives rise to a grave danger to the safety or health of persons, or serious harm to material objects or the environment.

8. The operation of facilities or the conduct of activities that could entail exposure to radiation of artificial or natural origin without adopting the necessary measures for their conduct in compliance with the principles, limits and procedures established in health protection against ionising radiations, both in normal situations, and in the case of accidental exposure or emergencies, which gives rise to a grave danger to the safety or health of persons, or serious harm to material objects or the environment.

9. Handling, transporting, or disposing of radiological material or equipment producing ionising radiations, which have been sealed or seized for nuclear safety or radiological protection reasons.

10. The abandonment or discharge of radioactive materials, whatever their physical condition or chemical formulation, in the atmosphere, water, soil, subsoil, which due to the magnitude and characteristics thereof give rise to a grave danger to the safety or health of persons, or serious harm to material objects or the environment.

11. Deliberate addition of radioactive material in the production of foodstuffs, toys, personal and cosmetic ornaments, which gives rise to a grave danger to the safety or health of persons, or serious harm to material objects or the environment.

12. The supply or transfer of radioactive materials to persons or entities who lack the required authorisations for their possession and use, or when those substances or materials fail to fulfil established identification and marking requirements, which gives rise to a grave

danger to the safety or health of persons, or serious harm to material objects or the environment.

13. The lack of required systems for storage, processing, and, if needed, evacuation of effluent or radioactive waste, where such conduct gives rise to a grave danger to the safety or health of persons, or serious harm to material objects or the environment.

14. Failure to proceed with the decommissioning and closure of nuclear and radioactive facilities once the operation has ceased, or failure to have a safe destination for redundant radioactive materials, which gives rise to a grave danger to the safety or health of persons, or serious harm to material objects or the environment.

15. The exercise of any activity regulated by this act, or by the present Act 15/1980 of 22 April on the creation of the Nuclear Safety Council, and its implementing provisions, without having civil liability coverage for the damage that might arise thereof, as laid down in specific applicable regulations.

    Should the infringement refer to transport of radioactive material, the present section shall only be applicable if it affects the transport of nuclear fuel, irradiated or not, or of radioactive waste with a concentration of radionuclides such that the generation of thermal energy during its storage and evacuation needs to be taken into account.

16. Impeding access of officials appointed by legally empowered national and international authorities, and their accompanying staff, accredited by those authorities, to nuclear and radioactive facilities or other premises or sites, irrespective of the activity carried on therein, where necessary for the purposes of inspection.

17. Impeding inspections, assessments or controls carried out by officials appointed by legally empowered authorities, and their accompanying staff, accredited by those authorities, by preventing them from taking samples or measurements, or concealing or refusing to disclose documents or information, or furnishing false or deliberately incomplete documents or information, whether or not requested by those officials, whenever by nature or content that documentation is necessary to establish the conclusions of the inspection, assessment or control, which gives rise to a grave danger to the safety or health of persons, or serious harm to material objects or the environment.

18. Failure to comply with the obligations of information and notification, in due time and form, to the legally empowered authorities or to their agents, which gives rise to a grave danger to the safety or health of persons, or serious harm to material objects or the environment.

19. Deliberate failure to comply with the obligations to provide information, intentional provision of false or incomplete information, loss of control over special fissile material, where that material can have a direct application as part of a nuclear explosive device and is not recovered, obstruction of inspections, assessments or controls carried out by officials appointed by legally empowered authorities, and the conduct of activities subject to the nuclear non-proliferation system, when carried on voluntarily for the purpose of contributing to the manufacture of a nuclear explosive device, even if nuclear materials are not handled, where any of these failures to comply make it impossible to fulfil the obligations concerning nuclear non-proliferation under the international agreements entered into by Spain.

20. Inadequacy or non-compliance with the measures required to prevent the presence of non-controlled materials in vital or protected areas of a nuclear and radioactive facility where, due to their nature and location, there arises a grave danger to safety or health of persons, or serious harm to material objects or the environment.

21. Inadequacy of or failure to comply with the measures destined to prevent the presence of non-authorised personnel in vital or protected areas of a nuclear and radioactive facility, where that presence gives rise to a grave danger to the safety or health for persons, or serious harm to material objects or the environment.

b) The following are grave infringements:

1. The actions or omissions specified in section a) of this article, with the exception of paragraphs 2, 9, 15, 16, 19 and 21, provided that they do not give rise to a grave danger to the safety or health for persons, or serious harm to material objects or the environment, and that the said conduct is not categorised as a minor infringement.

2. Failure to adopt measures necessary for safely disposing of radioactive materials found in out of control situations, either because they have never been controlled, or because they have been abandoned, lost, diverted, stolen, or transferred illegally, except for those cases which give little rise to a grave danger to the safety or health for persons, or serious harm to material objects or the environment.

3. Failure to comply with the obligations related to the generation, filing and custody of the records required in order to carry on the activity or to control radioactive materials, where that failure to comply entails loss of the information concerned.

4. Failure to furnish workers with the training or information required to allow them to perform their duties in compliance with the established standards and procedures on nuclear safety, ionising radiological protection, physical protection, or emergency procedures, except where there arises little danger to the safety or health for persons, or serious harm to material objects or the environment.

5. Actions or omissions which prevent or hinder the staff of the organisation or external companies rendering services to the facility, onsite or off site, from exercising the right to communicate deficiencies or dysfunctions which might compromise nuclear safety or radiological protection, or their involvement in the clarification of facts, or which involve discriminatory measures against those who have exercised that right.

6. Transport of radioactive materials, without having the civil liability coverage for any damages that might result from the activity, as laid down in specific applicable regulations.

   Should the transport affect nuclear fuel, whether irradiated or not, or radioactive waste with a concentration of radionuclides such that the generation of thermal energy during its storage and evacuation needs to be taken into account, the infringement shall be treated as very grave specified in paragraph 15 of Article 86.a).

7. Deliberate failure to comply with the obligations to provide information, intentional provision of false or incomplete information, loss of control over special fissile material,

where it is recovered and obstruction of inspections, assessments or controls carried out by officials appointed by legally empowered national or international authorities where any of these failures to comply make it impossible to fulfil the obligations concerning nuclear non-proliferation under the international agreements entered into by Spain.

8. Insufficiency or lack of observance of measures aimed at preventing the presence of unauthorised staff in vital or protected areas of a nuclear or radioactive facility

c) The following are minor infringements:

1. The actions or omissions specified in epigraph a) of this article, with the exception of those included in numbers 2, 9, 15, 16, 19 and 21, provided that they do not give rise to a grave danger to the safety or health of persons, or serious harm to material objects or the environment.

2. Failure to adopt measures necessary for safely disposing of radioactive materials found in situations out of control, either because they have never been controlled, or because they have been abandoned, lost, diverted, stolen, or transferred illegally, in those cases which do not give rise to a grave danger to the safety or health of persons, or serious harm to material objects or the environment.

3. Failure to comply with the obligations related to the generation, filing and custody of the records required to carry on the activity or to control radioactive materials, where that information is recovered.

4. Failure to furnish workers with the training or information required to allow them to carry on their duties in compliance with established standards and procedures on nuclear safety, radiological protection, physical protection, or emergency procedures, where there arises no danger to the safety or health of persons or serious harm to material objects or the environment.

5. Merely technical failure to comply with the obligations in non-proliferation, provided that it does not hinder compliance with any of the obligations concerning nuclear non-proliferation under the international agreements entered into by Spain, or loss of control over basic material.

Article 87 Qualification

1. For the purposes of this Chapter, grave danger to the safety or health of persons shall be deemed to arise when safe operation of the activity is degraded to such an extent that all devices, mechanisms or other safety barriers, or available administrative measures, fail to ensure prevention of exposure to ionising radiations, at doses corresponding to the appearance of determinist effects.

2. For the purposes of this Chapter, serious harm to material objects or the environment shall be deemed to arise when, as a consequence of their exposure to ionising radiations, present or future use of objects or the environment is affected.

3. For the purposes of this Chapter, danger to the safety or health of persons shall be deemed as not having arisen, or little danger to the safety or health of persons not having arisen when the safety of the operation of facility are not significantly affected, and no situation occurs which results in undue exposure to ionising radiations or, if such situations occur, doses remain under limits established by the regulations.

4. For the purposes of this Chapter, little damage shall be deemed to have arisen, when present or future use of objects or the environment is not affected.

Article 88 Classification of Sanctions

1. Sanctions shall be classified, in accordance with the principles of proportionality and the circumstances specified in paragraph 2 of this article, in three degrees: maximum, intermediate and minimum.

2. To classify the corresponding sanctions, the following circumstances shall be taken into account:

   a) The magnitude of the harm caused to persons, objects or the environment.

   b) The duration of the danger situation caused by an infringement.

   c) The impact of the infringing conduct on the safety of the activity.

   d) The existence or otherwise of previous cases of overexposure of employees or the public to ionising radiations within a two year period.

   e) The safety management background in the activity within a two year period.

   f) Failure to comply with previous notices, requests or warnings issued by competent authorities.

   g) Lack of consideration given to communications form employees, their legal representatives or third parties relating to nuclear safety or radiological protection.

   h) Profit obtained as a result of the commission of the infringement.

   i) The existence or otherwise of intent or negligence in the commission of an infringement, where these circumstances are not considered in the classification of the infringement and its reiteration.

   j) Diligence in the detection and identification of the facts constituting the infringement and their communication to competent authorities.

   k) Immediate rectification of the causes and effects of the infringement by the responsible person on his/her own initiative.

   l) Collaboration with the competent authority in the clarification of the events.

m) Reoffending, by commission within a two year period, with respect to more than one infringement of the same nature, when it so declared so by final decision without recourse.

n) The amount of nuclear material out of control, and its recovery or otherwise, when this latter circumstance is not foreseen in the classification of the infringement.

Article 89 Sanctions

1. In the case of power plants, the infringements typified in this act shall be subject to the following sanctions:

   Very grave infringements, with a fine ranging, in minimum degree from EUR 9 000 001 up to EUR 15 000 000, in intermediate degree from EUR 15 000 001 up to EUR 20 000 000, and in maximum degree, from EUR 20 000 001 up to EUR 30 000 000.

   Grave infringements, with a fine ranging, in minimum degree from EUR 300 001 up to EUR 1 500 000, in intermediate degree from 1 500 001 up to EUR 4 500 000, and in maximum degree, from EUR 4 500 001 up to EUR 9 000 000.

   Minor infringements, in minimum degree with a fine of EUR 15 000, in intermediate degree from EUR 15 001 up to EUR 150 001, and in maximum degree, from EUR 150 001 up to EUR 30 000.

2. In the case of nuclear facilities, other than nuclear power plants, the infringements defined in this act shall be subject to the following sanctions:

   Very grave infringements, with a fine ranging, in minimum degree from EUR 3 000 001 up to EUR 5 000 000, in intermediate degree from EUR 5 000 001 up to EUR 7 000 000, and in maximum degree from EUR 7 000 001 up to EUR 10 000 000.

   Grave infringements, with a fine ranging, in minimum degree from EUR 100 001 up to EUR 500 000, in intermediate degree from 500,001 up to EUR 1 500 000, and in maximum degree, from EUR 1 500 001 up to EUR 3 000 000.

   Minor infringements, in minimum degree with a fine of EUR 12 000, in intermediate degree from EUR 12 001 up to EUR 50 000, and in maximum degree, from EUR 50 001 up to EUR 100 000.

3. In the case of category two and three radioactive facilities are concerned, radiation protection technical units, radiological protection services, dosimetry centres, medical X-Ray equipment vendors and technical support companies, radioactive material transport, or any other activity and entity regulated by this act and its implementing regulations, the infringements typified in this act shall be subject to the following sanctions:

   Very grave infringements: Fines of the minimum degree from EUR 150 001 up to EUR 200 000, of the intermediate degree from EUR 200 001 up to EUR 400 000, and of the maximum degree from EUR 400 001 up to EUR 600 000.

Grave infringements: Fines of the minimum degree from EUR 6 001 up to EUR 15 000, of the intermediate degree from EUR 15 001 up to EUR 30 000, and of the maximum degree from EUR 30 001 up to EUR 150 000.

Minor infringements: Fines of the minimum degree EUR 1 200, of the intermediate degree from EUR 1 201 up to EUR 3 000, and from EUR 3 001 up to EUR 6 000 in maximum degree.

4. In the case of category one radioactive facilities, or transports of radioactive sources corresponding to the main activity of said facilities, the fines shall be reduced, for all infringement degrees, to one third of those established by section 2 of this article.

5. In case of transports of nuclear fuel, whether irradiated or not, or radioactive waste with a concentration of radionuclides such that the generation of thermal energy during storage and evacuation thereof needs to be taken into account, fines shall be reduced, for all infringement degrees, to two thirds of those established in section 2 of this article.

6. Very grave infringements shall, along with the fines provided, result in the revocation, withdrawal, or temporary suspension of the authorisations, licences or registrations in registers. The effectiveness of these measures may be ensured by the intervention or sealing of nuclear substances, radioactive materials, or equipment units producing ionising radiations, or the implementation of any applicable provisional measure.

   Likewise, they shall result in temporary or permanent barring of eligibility to hold any type of authorisation or license regulated by this act, by Act 15/1980 of 22 April on the Creation of the Nuclear Safety Council, and by its implementing regulations.

Article 90 Other Measures

Initiation of a proceeding for infringement of any of the provisions of this act or the regulations thereunder, shall result, if appropriate, following the agreement of the Ministry of Industry, Tourism and Trade, in immediate intervention with respect to nuclear fuel and radioactive materials, and subsequent prohibition of the purchase of further amounts of fuels and materials insofar as the causes that prompted the said intervention do not disappear.

Article 91 Procedure and Competences

1. The procedure for imposing sanctions shall be in accordance with the principles of articles 127 through 138 of Act 30/1992 of 26 November on the Legal Regime of Public Administrations and Ordinary Administrative Procedure, and the provisions of Royal Decree 1398/1993, of 4 August approving the procedure for the exercise of powers of sanction, with the exception of the maximum period for processing and notifying the relevant decision, which shall be one year.

2. The Nuclear Safety Council will propose, if necessary, the initiation of the corresponding sanctionary proceeding with regards to those facts that might constitute an infringement of nuclear safety, radiological protection, or physical protection matters, reporting to the authority responsible for initiating the proceeding both the events constituting the infringement observed, and the relevant circumstances necessary for its appropriate classification.

Furthermore, once a sanctionary proceeding in matters relating to nuclear safety and radiological protection is initiated, the Nuclear Safety Council shall issue a report, of a mandatory nature, within a period of three months, for the adequate classification of the events that are the subject of the proceeding. This report shall be issued when the proceeding is not initiated at the proposal of the Nuclear Safety Council, or in the event that, having been initiated at its proposal, the proceeding includes other data other than that communicated by it.

The Nuclear Safety Council report will result in the suspension of the period the sanctionary proceeding until it is issued, and in any case for a maximum three month period from the time when it was requested.

3. In the event of alleged infringements that could be qualified as minor, the Nuclear Safety Council, instead of proposing the initiation of the sanctionary proceeding, may warn the licensee for the activity and require the relevant corrective measures, where the circumstances so advise it, and that no direct harm or injury is caused to persons or the environment.

   If this requirement is not fulfilled, the Nuclear Safety Council may impose mandatory fines of a sum of ten per cent, the first time, ten per cent, and on the second and subsequent occasions, twenty per cent of the average corresponding sanction, in the intermediate degree, in order to bring about the cessation of acts of commission or omission which conflict with the provisions of present act or Act 15/1980 of 22 of April on the Creation of the Nuclear Safety Council, and their implementing regulations.

4. Irrespective of the sanction that might be applicable to the licensee, the Nuclear Safety Council shall admonish in writing the physical person who, by grave negligence, is responsible for a bad practice resulting in the material commission of sanctionable acts.

5. Under the jurisdiction of the State Administration, the organisations and units comprising the Directorate General for Energy Policy and Mines shall be responsible for initiating and conducting the sanctionary proceedings set out in this chapter.

6. Under the jurisdiction of the state administration, sanctions for very grave infringements by licensees of first class nuclear or radioactive facility shall be imposed by the Council of Ministers, for grave infringements by the Ministry of Industry, Tourism and Trade, and from minor infringements, by the Chairman of the Directorate General for Energy Policy and Mines.

   Sanctions resulting from very grave infringements by licensees of second and third class radioactive facility and the remaining activities regulated by this act or its implementing regulations shall be imposed by the Ministry of Industry, Tourism and Trade, and by the Chairman of the Directorate General for Energy Policy and Mines, in the case of grave and minor infringements.

7. Under the jurisdiction of the autonomous communities, the provisions of their own regulations shall apply.

8. The Government, by Royal Decree, shall revise the amounts of the fines established in this act in accordance with changes in the consumer price index.

9. With regard to transport of radioactive materials, this table of sanctions shall be applicable to those aspect specifically regulated by this act or its implementing regulations, without prejudice to the infringements and sanctions established in basic transport legislation.

Article 92 Precautionary Measures

The body competent for imposing sanctions, upon Nuclear Safety Council proposal, may, *inter alia*, impose the following precautionary measures:

a) Corrective, safety or control measures to prevent the continuance of in the infringement, or the occurrence of the hazard or damage.

b) Sealing of devices or equipment.

c) Seizure of materials or equipment.

d) Temporary, partial, or total suspension of operation of the facility or conduct of the activity.

The measures specified in the previous paragraph shall be agreed upon prior to initiation of or during the, administrative sanctionary proceeding, in accordance with the provisions of Articles 72 and 136 of Act 30/1992 on the Legal Regime of Public Administrations and Ordinary Administrative Procedures.

Article 93 Prescription

1. The infringements and sanctions provided in this chapter shall be time barred as follows:

    a) Very grave infringements, after five years, grave infringements, after three years, and minor infringements, after one year.

    b) Sanctions imposed for very grave infringements, after five years, those imposed for grave infringements, after three years, and those imposed for minor faults, after one year.

2. The period of prescription of infringements shall be counted from the day when the infringement occurred. For infringements resulting from an activity sustained over time, the starting date for the calculation shall be that on which the activity in which the infringement took place ended, or the moment in which the competent administration detected the existence of the infringement.

    The initiation of a sanctionary proceeding shall interrupt the prescription period, upon notice to the interested parties, and the prescription period shall resume if the sanctionary proceeding is stopped for more than one month for causes not attributable to the alleged offender.

3. The prescription period of sanctions shall begin from the date on which the sanctionary decision becomes final without recourse, and the prescription shall be interrupted when the corresponding procedure is initiated, upon notice to the interested party.

Sole Repeal Provision

All provisions of equal or lower rank that contradict with the provisions of this act are repealed.

First Final Provision

The Government, within a maximum period of nine months from the date of entry into force of this act, shall approve the amendment of the Statute of the Nuclear Safety Council.

Second Final Provision

This act shall enter into force on the day following its publication in the *Official State Gazette*.

Wherefore,

We order all Spaniards, both individuals and authorities, to observe and ensure the observation of this act.

International Regulatory Activities

International Atomic Energy Agency

Guidance on the Import and Export of Radioactive Sources supplementary to the Code of Conduct on the Safety and Security of Radioactive Sources (2008)

The agency held an open-ended meeting of technical and legal experts to share information on states' implementation of the guidance from 26 to 28 May 2008 in Vienna. This was a follow-up to the first international meeting on sharing information about states' implementation of the code held in Vienna in 2007 (see *Nuclear Law Bulletin* No. 80). The meeting was attended by 167 experts from 88 member states and by observers from the European Commission (EC), the Organization for Security and Co-operation in Europe (OSCE) and the International Source Suppliers and Producers Association (ISSPA).

The meeting included topical sessions on experiences and lessons learned from implementing the guidance from the perspective of exporting countries (and source suppliers) and importing countries. In addition, participants shared their experience regarding the application of the concept of "exceptional circumstances", the transit and trans-shipment of sources and the existing forms, the list of contact points and the protected webpage.

The meeting emphasised that it is important for each state to make a political commitment to the guidance recalling that a political commitment to the code did not automatically equate to the former.

Many states had provided national contact points to the IAEA. This information, which is available on the IAEA code webpage, is of mutual benefit to both importing states and exporting states, and all states (including those which had not yet made a political commitment) were encouraged to provide their point of contact to the IAEA.

The meeting concluded that the provision of information to exporting states on the regulatory and technical capacity of importing states would assist the former in reaching prompt and consistent decisions on applications for export authorisations which would also benefit the importing state. To that end, all states were encouraged to utilise appropriate bilateral, regional and multilateral networks and other mechanisms to provide such information consistent with the provisions of the code and the guidance.

The IAEA Secretariat was requested to assist states to develop regional networks or utilise existing ones to discuss the implementation of the guidance. Discussions within those networks would feed into the code's information exchange mechanism as foreseen by paragraph 3(b) of the "Process for the Sharing of Information as to States' Implementation of the Code of Conduct on the Safety and Security of Radioactive Sources and its associated Guidance on the Import and Export of Radioactive Sources" (GOV/2006/40-GC(50)/3, Annex 2).

To address the potential gap which might exist in relation to notification of the transit or trans-shipment of sources across states, the IAEA Secretariat was requested to analyse the scope of that gap

in consultation with the Transport Safety Standards Committee (TRANSSC) and other relevant agency mechanisms, and to advise the next information exchange meeting thereon.

Paragraph 20 of the guidance provides that "The Guidance should be reviewed and, if appropriate, revised by member states approximately five years after publication of this Guidance, or earlier if needed. In that regard, it was noted that any revision to the Guidance would necessitate the institution of a fresh process of political commitment, and should therefore be approached with caution". Participants viewed the next information exchange meeting, currently planned for 2010, as the appropriate opportunity to review the guidance, as provided for in paragraph 20.

52nd IAEA General Conference

The 52nd regular session of the IAEA General Conference was held from 29 September to 4 October 2008 in Vienna, with the participation of delegates from member states and representatives of various international organisations.

Resolutions of the Conference

A number of resolutions were adopted by the General Conference. As in previous years, two resolutions: GC(52)/RES/9 relating to International Cooperation in Nuclear, Radiation, Transport and Waste Safety and GC(52)/RES/10 relating to Nuclear Security include sections that are of legal relevance. This year's General Conference devoted special attention to the question of nuclear liability as indicated further below.

Measures to Strengthen International Cooperation in Nuclear, Radiation and Transport Safety and Waste Management (GC(52)/RES/9)

Nuclear Liability

In paragraph r) of the preamble, the General Conference noted the importance of effective and coherent nuclear liability regimes at the national and global levels and in paragraph s) of the preamble, the conference made specific reference to the Vienna Convention on Civil Liability for Nuclear Damage, the Paris Convention on Third Party Liability in the Field of Nuclear Energy as well as the Protocols amending these conventions. It further noted the intention of the Convention on Supplementary Compensation for Nuclear Damage to establish a worldwide nuclear liability regime based on the principles of nuclear liability law, without prejudice to other liability regimes.

In part A, the conference continued to welcome the valuable work of the International Expert Group on Nuclear Liability (INLEX) and paid special tribute to its outreach activities, specifically referring to the regional workshop held for African countries in February 2008 and encouraging relevant member states to participate in INLEX's next workshop in early 2009, for countries which have expressed an interest in launching a nuclear power programme.[1]

In Part B of the resolution relating to transport safety, the General Conference continued to stress the importance of having effective liability mechanisms in place to insure against harm to human health and the environment as well as actual economic loss due to an accident or incident during the maritime transport of radioactive materials.

1. For further information on the INLEX meeting, see page 231 of this Bulletin.

National Infrastructures

In Part A.1 of the resolution, the conference requested the Director General to continue the current programme to assist member states in improving their national infrastructures for nuclear installation, radiation, transport and waste safety, including their legislative and regulatory frameworks.

Nuclear Installation Safety

In Part A.3 of the resolution, the General Conference noted with satisfaction that all states currently operating nuclear power plants are contracting parties to the Convention on Nuclear Safety (CNS), and urged all member states constructing or planning nuclear power plants, or considering a nuclear power programme, to become parties to the CNS as part of the establishment and maintenance of the requisite nuclear power infrastructure.

The findings and outcomes of the fourth review meeting of contracting parties, including on the importance of ensuring openness and transparency were welcomed, and it was noted that the issue of regulatory independence requires further attention.

The conference also continued to endorse the principles and objectives of the non-legally binding Code of Conduct on the Safety of Research Reactors and encouraged member states constructing, operating or decommissioning research reactors, or with research reactors in extended shutdown to apply the guidance in the code.

The Safety of Radioactive Waste Management

In Part A.5 of the resolution, the General Conference welcomed the increase in the number of contracting parties to the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management from 32 in 2003 to 46 in 2008, and encouraged member states which have not yet become party to the Joint Convention to do so. The conference also welcomed the efforts of the contracting parties to enhance the transparency, efficiency and effectiveness of the review process, including the creation of a website to facilitate information sharing. The Joint Convention's third review meeting will be held in May 2009.

Safety and Security of Radioactive Sources

In Part A.9 of the resolution, the General Conference endorsed the principles and objectives of the non-legally-binding Code of Conduct on the Safety and Security of Radioactive Sources, noted that as at 4 July 2008, 92 states had made a political commitment to it and urged other states to follow suit.

The conference also underlined the importance of the Guidance on the Import and Export of Radioactive Sources for establishing continuous, global control of radioactive sources and noted that, as at 4 July 2008, 46 states had notified the Director General of their intention to act in accordance with the guidance on a harmonised basis. The conference encouraged those states which have not already notified the Director General to do so and the Secretariat was encouraged to make information available that would facilitate states' implementation of the guidance subject to the consent of the states concerned.

The conference took note of the report of the Chairman of the Open-ended Meeting of Technical and Legal Experts for Sharing of Information on Lessons Learned from States'

Implementation of the Guidance on the Import and Export of Radioactive Sources held in Vienna in May 2008.[2]

Nuclear and Radiological Incident and Emergency Preparedness and Response

In Part A.10 of the resolution, the General Conference urged all member states to become parties to the Convention on Early Notification of a Nuclear Accident and the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency. This would contribute to a broader and improved basis for international emergency response and work to the benefit of all member states.

Nuclear Security – Measures to Protect Against Nuclear Terrorism (GC(52)/RES/10)

The General Conference reaffirmed the importance of the Convention on the Physical Protection of Nuclear Material (CPPNM) as the only multilateral legally binding instrument dealing with the physical protection of nuclear material and the value of its amendment extending its scope, thereby strengthening global nuclear security.

States parties to the CPPNM were called upon to work towards its universal adherence and to accelerate the ratification of the Amendment to the CPPNM and to act for its early entry into force. They were also encouraged to act in accordance with the object and purpose of the amendment until such time as it enters into force. All states that have not done so were encouraged to adhere to the CPPNM and the amendment as soon as possible.

The conference reaffirmed the importance for nuclear security of the Code of Conduct on the Safety and Security of Radioactive Sources, the contribution of IAEA safeguards systems and of states' nuclear materials accounting and control systems, and the IAEA's contribution in preventing illicit trafficking and deterring and detecting diversion of nuclear materials.

2. See above, page 193 for further details on the meeting.

Bilateral & Multilateral Agreements

For readers who are less familiar with certain terms that are frequently used in public international law, the following definitions may be helpful.

- **Accession** is the act whereby a state that has not signed a treaty expresses its consent to become a party to that treaty by depositing an instrument of accession. It has the same legal effect as ratification, acceptance or approval *(UN Treaty Handbook; Articles 2(1)(b), 15 Vienna Convention of the Law of Treaties 1969).*

- **Adoption** of the text of a treaty takes place by the consent of all the states participating in its drawing up. The adoption of a treaty at an international conference takes place by the vote of two thirds of the states present and voting, unless by the same majority they shall decide to apply a different rule *(Article 9 Vienna Convention of the Law of Treaties 1969).*

- **Contracting state** means a state which has consented to be bound by the treaty, whether or not the treaty has entered into force *(Article 2(1)(f) Vienna Convention on the Law of Treaties 1969).*

- **Convention** is generally used for formal multilateral treaties with a broad number of parties; usually instruments negotiated under the auspices of international organisations are entitled conventions (*UN Treaty Handbook).*

- **Entry into force** is the moment when a treaty becomes legally binding on the parties to the treaty, determined by the provisions of the treaty, e.g. a date specified in the treaty or a date on which a specified number of ratifications, approvals, acceptances or accessions have been deposited (*UN Treaty Handbook, Article 24 Vienna Convention on the Law of Treaties 1969).*

- **Party (commonly referred to as contracting party)** means a state which has consented to be bound by the treaty and for which the treaty is in force *(Article 2(1)(g) Vienna Convention on the Law of Treaties 1969).*

- **Protocol** has the same legal characteristics as a treaty; it generally amends, supplements or clarifies a treaty or convention and is open to participation by the parties to the parent agreement. While it is linked to the parent agreement, it can focus on a specific aspect of that agreement in greater detail *(UN Treaty Handbook)*.

- **Ratification, acceptance or approval** at the international level indicates to the international community a state's commitment to undertake the obligations under a treaty. In the case of bilateral treaties, ratification is usually accomplished by exchanging the requisite instruments, while in the case of multilateral treaties the usual procedure is for the depositary to collect the ratification instruments of all states *(UN Treaty Handbook; Articles 2(1)(b), 14(1) and 16 Vienna Convention on the Law of Treaties 1969)*.

- **Signature** is a means of authentication and expresses the willingness of the signatory state to continue the treaty-making process. The signature qualifies the signatory state to proceed to ratification, acceptance or approval. It also creates an obligation to refrain, in good faith, from acts that would defeat the object and the purpose of the treaty *(Articles 10, 12, 18 Vienna Convention on the Law of Treaties 1969)*.

- **Treaty** means an international agreement concluded between states in written form and governed by international law and signifying that the parties intend to create rights and obligations enforceable under international law.

  A **bilateral treaty** is an international agreement concluded between two parties, each possessing treaty-making capacity.

  A **multilateral treaty** is an international agreement concluded between three or more parties, each possessing treaty-making capacity.

  (UN Treaty Handbook, Article 2(1)(a) of the Vienna Convention on the Law of Treaties 1969)

Bilateral Agreements

Editor's note

Some 5 years ago, the NLB editorial team changed its policy with respect to reporting on bilateral agreements on the peaceful uses of nuclear energy. The change was due to the fact that the NEA only receives information on a small proportion of the many bilateral agreements that are concluded each year and our reporting on such developments could not be complete or balanced. It was decided that future reporting of bilateral agreements would be limited to those deemed to be of particular interest to NLB readers from a legal perspective, notwithstanding that other such instruments might contain policy statements that would attract the attention of a wider audience.

The United States – India nuclear co-operation agreement is probably the most significant bilateral agreement to have been concluded in the field of nuclear energy in recent years and it is addressed in detail in the Topical Section of this Bulletin.

The following is a selective list of bilateral agreements which have been concluded during the course of 2008, brought to our attention largely on the basis of the news media and which we believe to be of particular interest to our readers.[1]

Co-operation in the peaceful uses of nuclear energy

- Algeria and Argentina: Agreement on co-operation in the peaceful use of nuclear energy.
- Algeria and China: Accord on the development of peaceful nuclear power.
- Bahrain and the United States: Memorandum of Understanding on nuclear energy co-operation to ensure the stability and diversity of Bahrain's energy supplies.
- Croatia and the United States: Co-operative Arrangement.
- China and Jordan: Memorandum of Understanding on co-operation in the peaceful use of nuclear energy, particularly covering mining, uranium enrichment, training and research, the construction of a research reactor and consultations on nuclear power plant construction.
- France and India: Agreement on civil nuclear co-operation.
- France and Libya: Agreement on, inter alia, the generation of electricity, water desalination, exploration of uranium, investment and training in nuclear energy.
- France and the Slovak Republic: Joint Political Declaration on strategic partnership and a co-operation agreement on civilian nuclear energy.
- Japan and Kazakhstan: Agreement for bilateral co-operation, including nuclear energy activities.
- Jordan and the United States: Memorandum of Understanding on the peaceful use of nuclear energy and to work together to develop requirements for appropriate power reactors, fuel service arrangements, civilian training, nuclear safety, energy technology and other related areas.
- Jordan and the United Kingdom: Memorandum of Understanding to facilitate co-operation in nuclear energy, including desalination of water.
- Russian Federation and the United States: Agreement on nuclear co-operation in the peaceful use of nuclear energy.[2]

1. World Nuclear News, NucNet News in Brief.

2. U.S. President cancelled submission of the agreement to the U.S. Congress on 8 September 2008.

- United States and Turkey: Agreement for co-operation in the peaceful use of nuclear energy.
- United Arab Emirates and the United States: Memorandum of Understanding on co-operation in peaceful uses of nuclear energy.
- United Arab Emirates and the United Kingdom: Memorandum of Understanding on co-operation in the peaceful uses of nuclear energy.
- Russian Federation and Venezuela: Agreement for co-operation in the field of the peaceful use of nuclear energy.
- Republic of Korea and Jordan: Agreement for co-operation in the field of the peaceful use of nuclear energy.

Co-operation in the field of uranium mining and production

- Japan and Kazakhstan: Agreement to increase co-operation in uranium mining and nuclear energy.
- Russian Federation and Armenia: Agreement setting up a joint venture to prospect for and mine uranium and other minerals in Armenia.
- Russian Federation and Mongolia: Agreement to co-operate in the production of Mongolian uranium.

Co-operation with respect to a nuclear facility or nuclear equipment

- China and the Russian Federation: Agreement on technical assistance for the construction of phase four of the gaseous uranium enrichment plant in China and supplies of Russian enriched uranium to China.
- Egypt and the Russian Federation: Agreement for co-operation allowing Russia to participate in a tender to build Egypt's first nuclear power plant.
- France and the United Kingdom: Agreement to establish a "joint project approach" for regulation of the European Pressurised Water Reactor (EPR).
- Jordan and China: An agreement for the purchase of a sub-critical assembly.
- Vietnam and Japan: Agreement to co-operate on preparatory work for the construction of Vietnam's first nuclear power plant.
- India and Russian Federation: Agreement on civil nuclear co-operation in the construction of additional units at Kudankulam as well as in the construction of Russian-designed nuclear plants at new sites in India.

Co-operation for training

Accords on training, research and human resources:

- Algeria and China,
- Algeria and France,
- Algeria and the Russian Federation, and
- Algeria and the United States.

Nuclear co-operation agreements for training of engineers and exchange of nuclear expertise:

- France and Libya,
- France and Morocco, and
- France and Tunisia.

Co-operation for research and development/exchange of scientific and technical information

International arrangements allowing for the exchange of unclassified technical and regulatory information relating to safety, safeguards, physical protection, transportation safety, radiation protection, waste management and environmental impact of nuclear facilities, materials and activities:

- United States and Australia,
- United States and France,
- United States and Greece, and
- United States and Indonesia.

Agreement to enhance research into nuclear fusion and to co-operate on training, publications, organisation of scientific conferences, plasma physics and modelling and fusion safety and security:

- International Atomic Energy Agency and ITER.

Multilateral Agreements

I. Status of conventions in the field of nuclear energy as of November 2008

Non-proliferation and nuclear security

Treaty on the Non-Proliferation of Nuclear Weapons

The treaty was adopted on 12 June 1968 and entered into force on 5 March 1970. There are **191 parties** to this convention:

Afghanistan	Dominica	Liberia	Saint Vincent and the Grenadines
Albania	Dominican Republic	Libya	Samoa
Algeria	Ecuador	Liechtenstein	San Marino
Andorra	Egypt	Lithuania	Sao Tome and Principe
Angola	El Salvador	Luxembourg	Saudi Arabia
Antigua and Barbuda	Equatorial Guinea	Macedonia	Senegal
Argentina	Eritrea	Madagascar	Serbia
Armenia	Estonia	Malawi	Seychelles
Australia	Ethiopia	Malaysia	Sierra Leone
Austria	Fiji	Maldives	Singapore
Azerbaijan	Finland	Mali	Slovak Republic
Bahamas	France	Malta	Slovenia
Bahrain	Gabon	Marshall Islands	Solomon Islands
Bangladesh	Gambia	Mauritania	Somalia
Barbados	Georgia	Mauritius	South Africa
Belarus	Germany	Mexico	Spain
Belgium	Ghana	Micronesia	Sri Lanka
Belize	Greece	Moldova	Sudan
Benin	Grenada	Monaco	Suriname
Bhutan	Guatemala	Mongolia	Swaziland
Bolivia	Guinea	Montenegro	Sweden
Bosnia and Herzegovina	Guinea-Bissau	Morocco	Switzerland
Botswana	Guyana	Mozambique	Syria
Brazil	Haiti	Myanmar	Tajikistan
Brunei Darussalam	Holy See	Namibia	Tanzania
Bulgaria	Honduras	Nauru	Thailand
Burkina Faso	Hungary	Nepal	Timor-Leste
Burundi	Iceland	Netherlands	Togo
Cambodia	Indonesia	New Zealand	Tonga
Cameroon	Iran	Nicaragua	Trinidad and Tobago
Canada	Iraq	Niger	Tunisia
Cape Verde	Ireland	Nigeria	Turkey
Central African Republic	Italy	Norway	Turkmenistan
Chad	Jamaica	Oman	Tuvalu
Chile	Japan	Palau	Uganda
China	Jordan	Panama	Ukraine
Colombia	Kazakhstan	Papua New Guinea	United Arab Emirates
Comoros	Kenya	Paraguay	United Kingdom
Congo	Kiribati	Peru	United States of
Democratic Republic of the	Democratic People's Republic	Philippines	America
Congo	of Korea*	Poland	Uruguay
Costa Rica	Korea, Republic of	Portugal	Uzbekistan
Côte d'Ivoire	Kuwait	Qatar	Vanuatu
Croatia	Kyrgyzstan	Romania	Venezuela
Cuba	Lao People's Democratic	Russian Federation	Vietnam
Cyprus	Republic	Rwanda	Yemen
Czech Republic	Latvia	Saint Kitts and Nevis	Zambia
Denmark	Lebanon	Saint Lucia	Zimbabwe
Djibouti	Lesotho		

* According to www.disarmament2.un.org/TreatyStatus.nsf.

Since the last status report in *Nuclear Law Bulletin* No. 70, three countries have become parties to this treaty, namely: Cuba, Timor-Leste and Montenegro.

The text of the Convention is available at: www.un.org/events/npt2005/npttreaty.html.

Convention on the Physical Protection of Nuclear Material

The convention was adopted on 3 March 1980 and entered into force on 8 February 1987. There are **137 parties** to this convention:

Afghanistan	Denmark	Libya	Romania*
Albania	Djibouti	Liechtenstein	Russian Federation*
Algeria	Dominica	Lithuania*	Rwanda
Andorra	Ecuador	Luxembourg	Saint Kitts and Nevis
Antigua and Barbuda	El Salvador	Macedonia	Senegal
Argentina*	Equatorial Guinea	Madagascar	Serbia
Armenia*	Estonia	Mali	Seychelles
Australia	Fiji	Malta	Slovak Republic*
Austria	Finland*	Marshall Islands	Slovenia*
Azerbaijan	France*	Mauritania	South Africa*
Bahamas	Gabon	Mexico*	Spain*
Bangladesh	Georgia	Moldova	Sudan
Belarus	Germany*	Monaco	Swaziland
Belgium*	Ghana	Mongolia	Sweden*
Bolivia	Greece	Montenegro	Switzerland*
Bosnia and Herzegovina	Grenada	Morocco	Tajikistan
Botswana	Guatemala	Mozambique	Tanzania
Brazil*	Guinea	Namibia	Togo
Bulgaria*	Guyana	Nauru	Tonga
Burkina Faso	Honduras	Netherlands*	Trinidad and Tobago
Cambodia	Hungary*	New Zealand	Tunisia
Cameroon	Iceland	Nicaragua	Turkey
Canada*	India*	Niger	Turkmenistan
Cape Verde	Indonesia	Nigeria	Uganda
Central African Republic	Ireland	Norway	Ukraine*
Chile	Israel	Oman	United Arab Emirates
China*	Italy	Pakistan*	United Kingdom*
Colombia	Jamaica	Palau	United States of America*
Comoros	Japan*	Panama	Uruguay
Costa Rica	Kazakhstan	Paraguay	Uzbekistan
Croatia	Kenya	Peru	Yemen
Cuba	Korea, Republic of*	Philippines	EURATOM.
Cyprus	Kuwait	Poland	
Czech Republic*	Latvia	Portugal	
Democratic Republic of Congo	Lebanon	Qatar	

Since the last status report in *Nuclear Law Bulletin* No. 76, eighteen states have become parties to this convention: Andorra, Cambodia, Cape Verde, Central African Republic, Comoros, Fiji, Gabon, Georgia, Guinea, Guyana, Mauritania, Montenegro, Nigeria, Palau, Saint Kitts and Nevis, United Republic of Tanzania, Togo and Yemen.

The text of the Convention is reproduced in *Nuclear Law Bulletin* No. 23 and is also available at: www.iaea.org/Publications/Documents/Infcircs/Others/inf274r1.shtml.

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* Country with at least one operating nuclear power plant.

Amendment to the Convention on the Physical Protection of Nuclear Material

The amendment was adopted on 8 July 2005 and has not yet entered into force. There are **19 contracting states** to this convention:

Algeria	Fiji	Mauritania	Seychelles
Australia	Gabon	Nigeria	Spain*
Austria	India*	Poland	Switzerland*
Bulgaria*	Kenya	Romania*	Turkmenistan
Croatia	Libya	Russian Federation*	

The text of this amendment is available at: http://ola.iaea.org/OLA/treaties/FullText.pdf.

International Convention for the Suppression of Acts of Nuclear Terrorism

The convention was adopted on 13 April 2005 and entered into force on 7 July 2007. There are **47 parties** to this convention.

Austria	Fiji	Lebanon	Saudi Arabia
Bangladesh	Gabon	Lithuania	Serbia
Belarus	Germany	Luxembourg	Slovak Republic
Burundi	Guinea-Bissau	Macedonia	South Africa
Central African Republic	Hungary	Mauritania	Spain
Comoros	India	Mexico	Sri Lanka
Croatia	Japan	Moldova	Switzerland
Cyprus	Kazakhstan	Mongolia	Turkmenistan
Czech Republic	Kenya	Niger	Ukraine
Denmark	Kiribati	Panama	United Arab Emirates
Dominican Republic	Kyrgyzstan	Romania	Uzbekistan
El Salvador	Latvia	Russian Federation	

The text of the convention is available at:
http://untreaty.un.org/English/Terrorism/English_18_15.pdf.

Comprehensive Nuclear-Test-Ban Treaty

The treaty was adopted on 10 September 1996 as has not yet entered into force. There are **148 contracting states** to this convention.

Of the 44 "Annex 2" states whose ratification is necessary for the treaty to enter into force, the following have not yet ratified: *China, Egypt, Democratic People's Republic of Korea, India, Indonesia, Iran, Israel, Pakistan and United States of America.*

Afghanistan	Czech Republic	Lesotho	Romania
Albania	Denmark	Libya	Russian Federation
Algeria	Djibouti	Liechtenstein	Rwanda
Andorra	Dominican Republic	Lithuania	Saint Kitts and Nevis
Antigua and Barbuda	Ecuador	Luxembourg	Saint Lucia
Argentina	El Salvador	Macedonia	Samoa
Armenia	Eritrea	Madagascar	San Marino
Australia	Estonia	Malawi	Senegal
Austria	Ethiopia	Malaysia	Serbia
Azerbaijan	Fiji	Maldives	Seychelles
Bahamas	Finland	Mali	Sierra Leone
Bahrain	France	Malta	Singapore
Bangladesh	Gabon	Mauritania	Slovak Republic
Barbados	Georgia	Mexico	Slovenia
Belarus	Germany	Micronesia	South Africa
Belgium	Greece	Moldova	Spain
Belize	Grenada	Monaco	Sudan
Benin	Guyana	Mongolia	Suriname
Bolivia	Haiti	Montenegro	Sweden
Bosnia and Herzegovina	Holy See	Morocco	Switzerland
Botswana	Honduras	Mozambique	Tajikistan
Brazil	Hungary	Namibia	Tanzania
Bulgaria	Iceland	Nauru	Togo
Burkina Faso	Ireland	Netherlands	Tunisia
Burundi	Italy	New Zealand	Turkey
Cambodia	Jamaica	Nicaragua	Turkmenistan
Cameroon	Japan	Niger	Uganda
Canada	Jordan	Nigeria	Ukraine
Cape Verde	Kazakhstan	Norway	United Arab Emirates
Chile	Kenya	Oman	United Kingdom
Colombia	Kiribati	Palau	Uruguay
Democratic Republic of the Congo	Korea, Republic of	Panama	Uzbekistan
Cook Islands	Kuwait	Paraguay	Vanuatu
Costa Rica	Kyrgyzstan	Peru	Venezuela
Côte d'Ivoire	Lao People's Democratic Republic	Philippines	Vietnam
Croatia	Latvia	Poland	Zambia
Cyprus	Lebanon	Portugal	
		Qatar	

Since the last status report in *Nuclear Law Bulletin* No. 76, twenty-three countries have become parties to this convention: Andorra, Antigua and Barbuda, Armenia, Bahamas, Barbados, Bosnia and Herzegovina, Burundi, Cameroon, Cape Verde, Colombia, Dominican Republic, Ethiopia, Haiti, Lebanon, Malawi, Malaysia, Moldova, Montenegro, Mozambique, Palau, Suriname, Vietnam and Zambia.

The text of the convention is reproduced in *Nuclear Law Bulletin* No. 58 and is also available at: www.ctbto.org/fileadmin/content/treaty/treatytext.tt.html.

Nuclear safety and emergency response

Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency

The convention was adopted on 26 September 1986 and entered into force on 26 February 1987. There are **101 parties** to this convention:

Albania	Finland*	Mali	Slovak Republic*
Algeria	France*	Mauritius	Slovenia*
Argentina*	Gabon	Mexico*	South Africa*
Armenia*	Germany*	Moldova	Spain*
Australia	Greece	Monaco	Sri Lanka
Austria	Guatemala	Mongolia	Sweden*
Bangladesh	Hungary*	Montenegro	Switzerland*
Belarus	Iceland	Morocco	Tanzania
Belgium*	India*	Netherlands*	Thailand
Bolivia	Indonesia	New Zealand	Tunisia
Bosnia and Herzegovina	Iran	Nicaragua	Turkey
Brazil*	Iraq	Nigeria	Ukraine*
Bulgaria*	Ireland	Norway	United Arab Emirates
Cameroon	Israel	Pakistan*	United Kingdom*
Canada*	Italy	Panama	United States of America*
Chile	Japan*	Peru	Uruguay
China*	Jordan	Philippines	Vietnam
Colombia	Korea, Republic of*	Poland	EURATOM
Costa Rica	Kuwait	Portugal	Food and Agriculture Organization
Croatia	Latvia	Qatar	World Health Organization
Cuba	Lebanon	Romania*	World Meteorological Organization.
Cyprus	Libya	Russian Federation*	
Czech Republic*	Liechtenstein	Saint Vincent and the Grenadines	
Denmark	Lithuania*	Saudi Arabia	
Egypt	Luxembourg	Serbia	
El Salvador	Macedonia	Singapore	
Estonia	Malaysia		

Since the last status report in *Nuclear Law Bulletin* No. 76, five countries and one international organisation have become parties to this convention, namely: Cameroon, Denmark, Gabon, Iceland, Montenegro, Qatar and EURATOM.

The text of the convention is reproduced in the Supplement to the *Nuclear Law Bulletin* No. 38 and is also available at:
www.iaea.org/Publications/Documents/Infcircs/Others/infcirc336.shtml.

* Country with at least one operating nuclear power plant.

Convention on Early Notification of a Nuclear Accident

The convention was adopted on 26 September 1986 and entered into force on 27 October 1986. There are **102 parties** to this convention:

Albania	El Salvador	Malaysia	Serbia
Algeria	Estonia	Mali	Singapore
Angola	Finland*	Mauritius	Slovak Republic*
Argentina*	France*	Mexico*	Slovenia*
Armenia*	Gabon	Moldova	South Africa*
Australia	Germany*	Monaco	Spain*
Austria	Greece	Mongolia	Sri Lanka
Bangladesh	Guatemala	Montenegro	Sweden*
Belarus	Hungary*	Morocco	Switzerland*
Belgium*	Iceland	Myanmar	Tanzania
Bolivia	India*	Netherlands*	Thailand
Bosnia and Herzegovina	Indonesia	New Zealand	Tunisia
Brazil*	Iran	Nicaragua	Turkey
Bulgaria*	Iraq	Nigeria	Ukraine*
Cameroon	Ireland	Norway	United Arab Emirates
Canada*	Israel	Pakistan*	United Kingdom*
Chile	Italy	Panama	United States of America*
China*	Japan*	Peru	Uruguay
Colombia	Jordan	Philippines	Vietnam
Costa Rica	Korea, Republic of*	Poland	EURATOM
Croatia	Kuwait	Portugal	Food and Agriculture Organization
Cuba	Latvia	Qatar	World Health Organization
Cyprus	Lebanon	Romania*	World Meteorological Organization.
Czech Republic*	Liechtenstein	Russian Federation*	
Denmark	Lithuania*	Saint Vincent and the Grenadines	
Egypt	Luxembourg	Saudi Arabia	
	Macedonia		

Since the last status report in *Nuclear Law Bulletin* No. 76, thirteen countries and an international organisation have become parties to this convention, namely: Albania, Algeria, Angola, Bolivia, Cameroon, Chile, Colombia, El Salvador, Gabon, Kuwait, Mali, Montenegro, United Republic of Tanzania and EURATOM.

The text of the convention is reproduced in the Supplement to *Nuclear Law Bulletin* No. 38 and is also available at: www.iaea.org/Publications/Documents/Infcircs/Others/infcirc335.shtml.

* Country with at least one operating nuclear power plant.

Convention on Nuclear Safety

The convention was adopted on 17 June 1994 and entered into force on 24 October 1996. There are **62 parties** to this convention:

Argentina*	Estonia	Lithuania*	Singapore
Armenia*	Finland*	Luxembourg	Slovak Republic*
Australia	France*	Macedonia	Slovenia*
Austria	Germany*	Mali	South Africa*
Bangladesh	Greece	Malta	Spain*
Belarus	Hungary*	Mexico*	Sri Lanka
Belgium*	Iceland	Moldova	Sweden*
Brazil*	India*	Netherlands*	Switzerland*
Bulgaria*	Indonesia	Nigeria	Turkey
Canada*	Ireland	Norway	Ukraine*
Chile	Italy	Pakistan*	United Kingdom*
China*	Japan*	Peru	United States of America*
Croatia	Korea, Republic of*	Poland	Uruguay
Cyprus	Kuwait	Portugal	EURATOM.
Czech Republic*	Latvia	Romania*	
Denmark	Lebanon	Russian Federation*	

Since the last status report in *Nuclear Law Bulletin* No. 65, eight countries have become parties to this convention, namely: Estonia, the Former Yugoslav Republic of Macedonia, Iceland, Indonesia, Kuwait, Malta, Nigeria and Uruguay. The text of the convention is reproduced in *Nuclear Law Bulletin* No. 53 and is available at:
www.iaea.org/Publications/Documents/Infcircs/Others/inf449.shtml.

Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management

The convention was adopted on 5 September 1997 and entered into force on 18 June 2001. There are **46 parties** to this convention:

Argentina*	Estonia	Latvia	South Africa*
Australia	Finland*	Lithuania*	Spain*
Austria	France*	Luxembourg	Sweden*
Belarus	Germany*	Morocco	Switzerland*
Belgium*	Greece	Netherlands*	Tajikistan
Brazil*	Hungary*	Nigeria	Ukraine*
Bulgaria*	Iceland	Norway	United Kingdom*
Canada*	Ireland	Poland	United States of America*
China*	Italy	Romania*	Uruguay
Croatia	Japan*	Russian Federation*	EURATOM.
Czech Republic*	Korea, Republic of *	Slovak Republic*	
Denmark	Kyrgyzstan	Slovenia*	

* Country with at least one operating nuclear power plant.

Since the last status report in *Nuclear Law Bulletin* No. 76, eleven countries have become parties to this convention, namely: Brazil, People's Republic of China,* Estonia, Iceland, Italy, Kyrgyzstan, Nigeria, Russian Federation,* South Africa,* Tajikistan and Uruguay.

The text of the convention is available at:
www.iaea.org/Publications/Documents/Infcircs/1997/infcirc546.pdf.

Liability and compensation for nuclear damage

Paris Convention on Nuclear Third Party Liability

The convention was adopted on 29 July 1960 and entered into force on 1 April 1968, along with its 1964 additional protocol. The 1982 Protocol entered into force on 7 October 1988. The 2004 Protocol has not yet entered into force.

There are **15 parties** to this convention and its 1964 and 1982 additional protocols:

Belgium*	Germany*	Norway	Sweden*
Denmark	Greece	Portugal	Turkey
Finland*	Italy	Slovenia*	United Kingdom*
France*	Netherlands*	Spain*	

The text of the convention is available at: www.nea.fr/html/law/nlparis_conv.html.

Brussels Supplementary Convention on Third Party Liability in the Field of Nuclear Energy

The convention was adopted on 31 January 1963 and entered into force on 4 December 1974, along with its 1964 additional protocol. The 1982 Protocol entered into force on 1 January 1988. The 2004 Protocol has not yet entered into force. There are **12 parties** to this convention:

Belgium*	France*	Netherlands*	Spain*
Denmark	Germany*	Norway	Sweden*
Finland*	Italy	Slovenia*	United Kingdom*

The text of the convention is available at: www.nea.fr/html/law/nlbrussels.html.

Protocol to Amend the Paris Convention on Nuclear Third Party Liability

The protocol was adopted on 12 February 2004 as has not yet entered into force. There are **16 signatories** to this convention, namely: Belgium, Denmark, Finland, France, Germany, Greece, Italy, Netherlands, Norway, Portugal, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom. No signatory has yet ratified the Protocol.

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* Country with at least one operating nuclear power plant.

The text of the protocol is reproduced in the Supplement to *Nuclear Law Bulletin* No. 75 and is also available at: http://home.nea.fr/html/law/paris_convention.pdf.

Protocol to Amend the Brussels Convention Supplementary to the Paris Convention

The protocol was adopted on 12 February 2004 and has not yet entered into force. There are **13 signatories** to this convention: Belgium, Denmark, Finland, France, Germany, Italy, Netherlands, Norway, Slovenia, Spain, Sweden, Switzerland and United Kingdom. Only Spain has ratified the Protocol.

The text of the protocol was reproduced in the Supplement to *Nuclear Law Bulletin* No. 75 and is also available at: http://home.nea.fr/html/law/brussels_supplementary_convention.pdf.

Vienna Convention on Civil Liability for Nuclear Damage

The convention was adopted on 21 May 1963 and entered into force on 12 November 1977. There are **35 parties** to this convention:

Argentina*	Croatia	Macedonia	Romania*
Armenia*	Cuba	Mexico*	Russian Federation*
Belarus	Czech Republic*	Moldova	Saint Vincent and the Grenadines
Bolivia	Egypt	Montenegro	Serbia
Bosnia-Herzegovina	Estonia	Niger	Slovak Republic*
Brazil*	Hungary*	Nigeria	Trinidad and Tobago
Bulgaria*	Latvia	Peru	Ukraine*
Cameroon	Lebanon	Philippines	Uruguay
Chile	Lithuania*	Poland	

The text of the convention is available at:
www.iaea.org/Publications/Documents/Infcircs/1996/inf500.shtml.

Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage

The convention was adopted on 12 September 1997 and entered into force on 4 October 2003. There are **5 parties** to this convention, namely: Argentina,* Belarus, Latvia, Morocco and Romania.*

The text of the convention is available at:
www.iaea.org/Publications/Documents/Infcircs/1998/infcirc566.shtml.

* Country with at least one operating nuclear power plant.

Joint Protocol relating to the Application of the Vienna Convention and the Paris Convention

The convention was adopted on 21 September 1988 and entered into force on 27 April 1992. There are **25 parties** to this convention ("PC" or "VC" indicates that the state is party to the Paris Convention or Vienna Convention):

Bulgaria* (VC) Cameroon (VC) Chile (VC) Croatia (VC) Czech Republic* (VC) Denmark (PC) Egypt (VC)	Estonia (VC) Finland* (PC) Germany* (PC) Greece (PC) Hungary* (VC) Italy (PC) Latvia (VC)	Lithuania* (VC) Netherlands* (PC) Norway (PC) Poland (VC) Romania* (VC) Saint Vincent and the Grenadines (VC)	Slovak Republic* (VC) Slovenia* (PC) Sweden* (PC) Turkey (PC) Ukraine* (VC)

Since the last status report in *Nuclear Law Bulletin* No. 65, Turkey has become party to this convention.

The text of the convention is reproduced in *Nuclear Law Bulletin* No. 42 and is also available at: www.iaea.org/Publications/Documents/Infcircs/Others/inf402.shtml.

Convention on Supplementary Compensation for Nuclear Damage

The convention was adopted on 12 September 1997 as has not yet entered into force. Four countries have ratified this convention, namely: Argentina, Morocco, Romania and the United States of America.

Since the last status report in *Nuclear Law Bulletin* No. 67, the United States has become a contracting state to this convention.

The text of the Convention is available at:
www.iaea.org/Publications/Documents/Infcircs/1998/infcirc567.pdf.

* Country with at least one operating nuclear power plant.

II. Status of conventions in the field of environmental protection/assessment which affect nuclear energy use as of November 2008

Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention)

The convention was adopted on 25 June 1998 and entered into force on 30 October 2001. There are **42 parties** to this convention:

Albania	Czech Republic	Kyrgyzstan	Romania
Armenia	Denmark	Latvia	Slovak Republic
Austria	Estonia	Lithuania	Slovenia
Azerbaijan	Finland	Luxembourg	Spain
Belarus	France	Macedonia	Sweden
Belgium	Georgia	Malta	Tajikistan
Bosnia and	Germany	Moldova	Turkmenistan
Herzegovina	Greece	Netherlands	Ukraine
Bulgaria	Hungary	Norway	United Kingdom
Croatia	Italy	Poland	European Community.
Cyprus	Kazakhstan	Portugal	

The text of the convention is available at: www.unece.org/env/pp/documents/cep43e.pdf.

Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention)

The convention was adopted on 25 February 1991 and entered into force on 10 September 1997. There are **42 parties** to this convention:

Albania	Denmark	Latvia	Serbia
Armenia	Estonia	Liechtenstein	Slovak Republic
Austria	Finland	Lithuania	Slovenia
Azerbaijan	France	Luxembourg	Spain
Belarus	Germany	Macedonia	Sweden
Belgium	Greece	Moldova	Switzerland
Bulgaria	Hungary	Netherlands	Ukraine
Canada	Ireland	Norway	United Kingdom
Croatia	Italy	Poland	European Community
Cyprus	Kazakhstan	Portugal	
Czech Republic	Kyrgyzstan	Romania	

The text of the convention is available at:
www.unece.org/env/eia/documents/legaltexts/conventiontextenglish.pdf.

Protocol on Strategic Environmental Assessment (Kiev Protocol)

The protocol was adopted on 21 May 2003 and has not yet entered into force. **Ten countries** have ratified this convention, namely: Albania, Bulgaria, Czech Republic, Finland, Germany, Luxembourg, Norway, Slovak Republic, Sweden and the European Community.

The text of the convention is available at: www.unece.org/env/eia/documents/legaltexts/protocolenglish.pdf.

Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR)

The convention was adopted on 22 September 1992 and entered into force on 25 March 1998. There are **16 parties** to this convention:

Belgium	Germany	Netherlands	Sweden
Denmark	Iceland	Norway	Switzerland
Finland	Ireland	Portugal	United Kingdom
France	Luxembourg	Spain	European Community

The text of the convention is available at: www.ospar.org.

III. OECD member country's participation in the nuclear energy treaties/conventions and in the environmental protection/assessment conventions referred to above as of November 2008

The following illustrates the convention/treaty status of each OECD member country as of November 2008.

Australia

- Treaty on the Non-Proliferation of Nuclear Weapons
- Convention on the Physical Protection of Nuclear Material
- Amendment to the Convention on the Physical Protection of Nuclear Material*
- Comprehensive Nuclear-Test-Ban Treaty*
- Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency
- Convention on Early Notification of a Nuclear Accident
- Convention on Nuclear Safety
- Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management

Austria

- Treaty on the Non-Proliferation of Nuclear Weapons
- Convention on the Physical Protection of Nuclear Material
- Amendment to the Convention on the Physical Protection of Nuclear Material*
- International Convention for the Suppression of Acts of Nuclear Terrorism
- Comprehensive Nuclear-Test-Ban Treaty*
- Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency
- Convention on Early Notification of a Nuclear Accident
- Convention on Nuclear Safety
- Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management
- Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters
- Convention on Environmental Impact Assessment in a Transboundary Context

Belgium

- Treaty on the Non-Proliferation of Nuclear Weapons
- Convention on the Physical Protection of Nuclear Material
- Comprehensive Nuclear-Test-Ban Treaty*
- Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency
- Convention on Early Notification of a Nuclear Accident
- Convention on Nuclear Safety
- Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management

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* Not yet in force.

- Paris Convention on Nuclear Third Party Liability
- Brussels Supplementary Convention on Third Party Liability in the Field of Nuclear Energy
- Protocol to Amend the Paris Convention on Nuclear Third Party Liability*
- Protocol to Amend the Brussels Convention Supplementary to the Paris Convention*
- Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters
- Convention on Environmental Impact Assessment in a Transboundary Context
- Convention for the Protection of the Marine Environment of the North-East Atlantic

Canada

- Treaty on the Non-Proliferation of Nuclear Weapons
- Convention on the Physical Protection of Nuclear Material
- Comprehensive Nuclear-Test-Ban Treaty*
- Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency
- Convention on Early Notification of a Nuclear Accident
- Convention on Nuclear Safety
- Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management
- Convention on Environmental Impact Assessment in a Transboundary Context

Czech Republic

- Treaty on the Non-Proliferation of Nuclear Weapons
- Convention on the Physical Protection of Nuclear Material
- International Convention for the Suppression of Acts of Nuclear Terrorism
- Comprehensive Nuclear-Test-Ban Treaty*
- Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency
- Convention on Early Notification of a Nuclear Accident
- Convention on Nuclear Safety
- Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management
- Vienna Convention on Civil Liability for Nuclear Damage
- Joint Protocol relating to the Application of the Vienna Convention and the Paris Convention
- Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters
- Convention on Environmental Impact Assessment in a Transboundary Context
- Protocol on Strategic Environmental Assessment*

Denmark

- Treaty on the Non-Proliferation of Nuclear Weapons
- Convention on the Physical Protection of Nuclear Material
- International Convention for the Suppression of Acts of Nuclear Terrorism

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* Not yet in force.

- Comprehensive Nuclear-Test-Ban Treaty*
- Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency
- Convention on Early Notification of a Nuclear Accident
- Convention on Nuclear Safety
- Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management
- Paris Convention on Nuclear Third Party Liability
- Brussels Supplementary Convention on Third Party Liability in the Field of Nuclear Energy
- Protocol to Amend the Paris Convention on Nuclear Third Party Liability*
- Protocol to Amend the Brussels Convention Supplementary to the Paris Convention*
- Joint Protocol relating to the Application of the Vienna Convention and the Paris Convention
- Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters
- Convention on Environmental Impact Assessment in a Transboundary Context
- Convention for the Protection of the Marine Environment of the North-East Atlantic

Finland

- Treaty on the Non-Proliferation of Nuclear Weapons
- Convention on the Physical Protection of Nuclear Material
- Comprehensive Nuclear-Test-Ban Treaty*
- Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency
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France

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Germany

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Greece

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Hungary

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- Convention on Nuclear Safety
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Iceland

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Ireland

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Italy

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Japan

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Korea (Republic of)

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- Convention on Early Notification of a Nuclear Accident
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Luxembourg

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Mexico

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- Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency
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- Convention on Nuclear Safety
- Vienna Convention on Civil Liability for Nuclear Damage

Netherlands

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New Zealand

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Norway

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Poland

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Portugal

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Slovak Republic

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Spain

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Sweden

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* Not yet in force.

Switzerland

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Turkey

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United Kingdom

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* Not yet in force.

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United States of America

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- Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency
- Convention on Early Notification of a Nuclear Accident
- Convention on Nuclear Safety
- Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management
- Convention on Supplementary Compensation for Nuclear Damage*

* Not yet in force.

Bibliography & News Briefs

Bibliography

Nuclear Energy Agency

New Publication: Nuclear Energy Outlook (2008)

The *Nuclear Energy Outlook* (NEO) is the first publication of its kind and responds to the renewed interest in nuclear energy by many OECD member countries. World energy demand continues to grow unabated and is leading to very serious concerns about security of supply, soaring energy prices and climate change stemming from fossil fuel consumption. Nuclear energy is being increasingly seen as having a role to play in addressing these concerns.

This Outlook uses the most current data and statistics available and provides projections up to 2050 to consider growth scenarios and potential implications on the future use of nuclear energy. It also offers unique analyses and recommendations on the possible challenges that lie ahead.

Topics covered by the NEO include nuclear power's current status and projected trends, environmental impacts, uranium resources and security of supply, costs, safety and regulation, radioactive waste management and decommissioning, non-proliferation and security, legal frameworks, infrastructure, stakeholder engagement, advanced reactors and advanced fuel cycles.

Legal Issues

The renewed interest in nuclear energy entails particular challenges for national and international legal frameworks which are addressed in Chapters 9, 10, 12 of the Outlook.

Chapter 9 focuses on current and emerging issues in the nuclear non-proliferation and security fields. It examines the nuclear non-proliferation regime and related treaties and discusses ways and means by which that regime might be preserved and enhanced. It also takes a close look at the impact of international instruments addressing nuclear security concerns. While predictions are always difficult, the Outlook does identify a number of realistic trends for the future, including the acknowledged need for harmonised legal frameworks, co-ordination of co-operation and assistance, overcoming weak enforcement and compliance measures, balancing transparency and confidentiality and responding to the so-called "nuclear renaissance".

Chapter 10 deals with the suite of legally-binding conventions, treaties, agreements and resolutions, together with the non-legally binding codes, guidelines and standards, which make up the current international legal framework for carrying out nuclear activities and which are reflected in national legal frameworks. The challenge for governments in the future will be to ensure that these frameworks, which have already undergone significant changes over the past five decades, remain sufficiently flexible to adapt to future developments, including a significant increase in global energy production and to attract adhesion by countries embarking on nuclear power programmes for the first time.

Finally, Chapter 12 on stakeholder engagement includes a study of the evolution of international laws granting public rights of access to information and participation in nuclear decision-making by governments. In addition, it projects an increasingly participative approach, given the recognition by legislators that stakeholder involvement will lead to more effective implementation of nuclear safety and environmental policies, thereby further enhancing public confidence in nuclear activities. For such an approach to be effective, a legal framework based on transparency and stakeholder involvement is essential.

NEA Online Publication: Nuclear Legislation in OECD Countries (2008)

The Nuclear Energy Agency publishes its *Regulatory and Institutional Framework for Nuclear Activities* as a free and exclusively online publication on its website *Nuclear Legislation in OECD Countries,* available at www.nea.fr/html/law/legislation/welcome.html.

The various chapters of this publication are organised on the basis of a standardised format, thus facilitating the search for and comparison of information. It provides reliable information on the nuclear legislation and institutional framework governing nuclear activities in the 30 OECD member countries. The chapters have been updated or are in the process of being updated at the moment to be posted on the referred website shortly. Users may also find links to the texts of national nuclear legislation of the various countries under the country profiles.

The NEA has also created a new site, *Latest Legislative Developments in OECD countries* at www.nea.fr/html/law/legislation/updates.html where it posts information on recent legislative developments, as soon as they have been provided by national correspondents to the *Nuclear Law Bulletin*.

News Briefs

European Atomic Energy Community

Second Strategic Energy Review & Update of the Nuclear Illustrative Programme (2008)

The European Commission has published its second Strategic Energy Review.

In the review, the European Commission defines its strategy to realise a forward-looking political agenda and achieve its core energy objectives of sustainability, competitiveness and security of supply. The ambitious agenda aims at reducing greenhouse gas emissions by 20%, increasing the share of renewables in the energy consumption to 20% and improving energy efficiency by 20%, all of it by 2020 ("20-20-20" targets).[1] The Commission proposes a five-point EU Energy Security and Solidarity Action Plan, namely (a) infrastructure needs and the diversification of energy supplies, (b) external energy relations, (c) oil and gas stocks and crisis response mechanisms, (d) energy efficiency and (e) making the best use of the EU's indigenous energy resources.

With respect to nuclear energy the review states that it "contributes to the EU's security of energy supply as a major source of baseload electricity, not increasing greenhouse gas emissions and thus combating climate change". The Commission acknowledges that it is for each member state to

1. EU Energy Security and Solidarity Action Plan: 2nd Strategic Energy Review, MEMO/08/703.

choose whether or not to invest in nuclear energy but – in order "to maintain the highest safety, security, non-proliferation and environmental protection standards for nuclear generation" – it announces the presentation of revised proposals for a directive setting up a Community framework for nuclear safety in 2008.

In the context of the Second Strategic Energy Review, the Commission also updated its Nuclear Illustrative Programme (PINC) of 2007 (see *Nuclear Law Bulletin* Nos. 79 and 80) in which it focuses on the key aspects of security of supply, investment needs and the conditions for realising investments. The Commission presents a picture on the new plants under construction, new investment plans, the capacity uprating and lifetime extensions as well as planned closures and predicts that according to the "current projections, the nuclear generating capacity in the EU would fall by as much as 33 GWe by 2020". The updated PINC address the issues discussed in several fora, such as the European Social and Economic Committee, the High Level Group on Nuclear Safety and Waste Management and the European Nuclear Energy Forum.

Finally, the Commission introduced three recommendations: On licensing issues, the Commission recommends that common reactor safety levels for existing nuclear power plants and new builds should be adopted and that "only designs whose safety and security levels are equivalent to Generation III, or subsequent improvements should be considered in the EU for future new builds". On civil liability for nuclear damage, the recommendation is that "a more coherent and harmonised liability scheme should be developed to ensure a comparable level of protection for citizens and to create a level playing field for EU nuclear industry".

Meetings of the High Level Group on Nuclear Safety and Waste Management (2008)

The last three meetings of the European High Level Group on Nuclear Safety and Waste Management (HLG) took place on 21 April in Vienna, on 30 May and on 15 October 2008 in Brussels, marking the agreement of the nuclear safety regulators from all 27 EU member states on steps to further strengthen nuclear safety, radioactive waste management and decommissioning arrangements in the EU. The group's activity received large support from the European Parliament and the Western European Nuclear Regulators Association (WENRA). The growing interest in the group's activity in Europe and worldwide was illustrated by the extension of membership to observers from Switzerland, Norway and the IAEA.

According to Article 6 of Commission Decision of 17 July 2007,[2] the HLG shall submit a report of its activities to the Commission, the first one of which is due by July 2009, and the Commission shall transmit the report to the European Parliament and Council.

At the meeting of the HLG on 30 May 2008, all delegates committed themselves to further improvements in the following areas:

- EU member states' regulators have committed to openly exchange information emerging from the review process under the Convention on Nuclear Safety and the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. In addition, common lessons learned will be sought to enhance nuclear safety or radioactive waste management arrangements in all EU members states based on findings in each of them.

2. 2007/530/EURATOM.

- EU members states' regulators will invite IAEA peer review teams to thoroughly review arrangements in their regulatory bodies and seek areas where lessons can be learnt from international best practice and identify areas of good practice. In the meantime, all member states should undertake a self assessment against the IAEA standards, inviting experts from other EU member states as appropriate.

- Regulators have agreed to work together to further improve radioactive waste and spent fuel management practices in the EU, to strengthen co-operation and to monitor the enhancement of the financing of decommissioning and the safe management of spent fuel and radioactive waste. In the months to come, discussions in the HLG should be held on the establishment and implementation of radioactive waste management plans in all the EU member states.

The fifth meeting of the HLG on 15 October 2008 was opened by Energy Commissioner, *Andris Piebalgs*, who highlighted the increased attention given to nuclear safety issues and the importance attached to the need for a higher level of nuclear safety, better management of radioactive waste and better communication to the public through broader stakeholder consensus provided by the European Nuclear Energy Forum.[3] In the course of the meeting, the Commission circulated draft directives on nuclear safety with the aim of harmonisation of the highest safety standards throughout the European Union. Unlike the first draft directives of 2003 and 2004, the present draft does not contain provisions on waste management and its funding. Following the consultations in the High Level Group, the European Nuclear Energy Forum and the Western European Nuclear Regulators Association, the Commission adopted a revised proposal for a directive on 26 November 2008. Under Article 31 and 32 of the Treaty establishing the European Atomic Energy Community, qualified majority is sufficient to pass the legislation. The Euratom Treaty requires consultation with the European Parliament which has, however, no co-decision powers.

The HLG also decided to change its name to European Nuclear Safety Regulators Group (ENSREG).

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, Slovakia, on 3 and 4 November 2008. Approximately 200 participants took note of the detailed progress reports on the work of the ENEF working groups (WG) on opportunities, risks and transparency, presented by the chairmen of the WG's, and discussed the results in panel discussions and debates.

The WG on Information and Transparency is chaired by *Mr. János Tóth* of the European Economic and Social Committee. His report was followed by a debate on how to improve public consultation and the need to define the role of local and national decision-makers in the process.

The report of the WG Risks, which is chaired by *Dr. Walter Hohlefelder* of E.ON, focused on issues related to a European legal framework on nuclear safety that the European Commission should take into account when drafting its directives in this field.

Finally, the report of the WG Opportunities, which is chaired by *Mr. Jean-Pol Poncelet* of AREVA, highlighted the competitiveness of nuclear energy and outlined concrete ways of offering

3. RAPID Press Release, IP/08/1512 of 15 October 2008.

stable and competitive electricity prices for Europe's consumers. The WG Opportunities has founded the subgroup "Nuclear Legal Road Map" with the aim to establish a nuclear energy roadmap to improve the legal framework, including greater harmonisation of licensing procedures. The subgroup will address more issues on nuclear law in due time and in close co-operation with other groups and subgroups of ENEF.

The next ENEF plenary meeting will take place in Prague in May 2009.

G8 Hokkaido Summit

Joint Statement by G8 Heads of State, Hokkaido, Japan (2008)

On 8 July 2008, leaders of the G8 issued a statement on environment and climate change endorsing a global agreement in the United Nations Framework Convention on Climate Change (UNFCCC) by 2009. In the statement, G8 leaders sought to share with all parties to the UNFCCC a vision of the global target of a 50% cut in carbon emissions by 2050.

It is acknowledged in No. 28 of this statement that nuclear energy could contribute to this goal given "that a growing number of countries have expressed their interests in nuclear power programs as a means to addressing climate change and energy security concerns. These countries regard nuclear power as an essential instrument in reducing dependence on fossil fuels and hence greenhouse gas emissions". They further reiterate in the statement "that safeguards (nuclear non-proliferation), nuclear safety and nuclear security (3S) are fundamental principles for the peaceful use of nuclear energy. Against this background, an international initiative proposed by Japan on 3S-based nuclear energy infrastructure will be launched", affirming the role of the International Atomic Energy Agency (IAEA) in this process.

The full statement is available at www.g8summit.go.jp/eng/doc/doc080709_02_en.html.

International Atomic Energy Agency

International Expert Group on Nuclear Liability (2008)

The 8th meeting of the International Expert Group on Nuclear Liability (INLEX), established by the Director General in 2003 (see *Nuclear Law Bulletin* Nos. 74 and 75), took place from 21 to 23 May 2008 at IAEA headquarters in Vienna. The opening day of the meeting was marked by the United States' depositing its instrument of ratification of the Convention on Supplementary Compensation for Nuclear Damage (CSC).

Major topics discussed during the meeting included, *inter alia*, INLEX outreach activities, the EC Impact Assessment on Nuclear Liability and the German proposal to allow Contracting Parties to the 1997 Vienna Convention on Civil Liability for Nuclear Damage (and possibly the CSC as well) to exclude certain small research reactors and nuclear installations being decommissioned from the scope of application of these conventions.

On INLEX outreach activities, the meeting reviewed the results of the third Regional Workshop on Liability for Nuclear Damage held in Sun City, South Africa, 11 to 13 February 2008 and noted the growing interest expressed by workshop participants on the mechanisms associated with developing

and implementing national nuclear liability legislation in accordance with the international nuclear liability instruments.

On the EC Impact Assessment on Nuclear Liability, INLEX will follow closely the study launched by the EC aimed at identifying the possible impacts of the different policy options that are open to the EC with respect to trying to achieve a uniform regime on nuclear third party liability within the European Union (EU). With a growing number of European countries having recently requested the EC to give its opinion on the construction of new nuclear power plants and the current state of the nuclear liability regime within the EU, the matter of harmonisation has resurfaced in the EU. INLEX expressed concern over the current alternatives proposed by the EC, especially the suggestion that Euratom could adopt a directive on liability, and encouraged the EC to continue to look at all the possible avenues available, including those that would contribute to strengthening the global nuclear liability regime such as the CSC or the Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention.

On the German proposals to allow contracting parties to exclude certain small research reactors and nuclear installations being decommissioned from the scope of application of the 1997 Vienna Convention on Civil Liability for Nuclear Damage (and possibly the CSC as well), INLEX noted that similar proposals had also been introduced by Germany in the framework of the Paris Conventions on nuclear liability adopted under OECD/NEA auspices. The meeting agreed that a uniform approach between the Paris and the Vienna regime should be pursued and called for continued co-operation between the OECD/NEA and the IAEA in this regard. As a first step, the meeting agreed to forward the proposals for technical evaluation to the IAEA Waste Safety Standards Committee (WASSC) and Radiation Safety Standards Committee (RASSC).

International Nuclear Law Association

2009 Nuclear Inter Jura Biennial Congress in Toronto

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), this time in co-operation with the Canadian Nuclear Law Organisation.

INLA was established in the early 1970s with the aim of strengthening communication and relations among lawyers active in this field to facilitate exchange of information and promote co-operation. According to Article 3 of its statutes, INLA shall have as objectives the promotion and pursuit, on an international level, of studies and knowledge of legal issues related to the peaceful utilisation of nuclear energy, with a focus on protecting persons, property and the environment as well as the exchange of information between members of the association. For this purpose, it may organise or promote meetings, congresses, debates, lectures, conferences and seminars.

Every two years, at the Nuclear Inter Jura Congress, participants address a wide variety of legal issues in the context of the latest legal, political and economic climate. More information on the forthcoming congress, including further details on the programme, will be available at www.aidn-inla.be shortly.

International Radiation Protection Association

12th International Congress (2008)

The 12th International Congress of the International Radiation Protection Association (IRPA) took place from 19 to 24 October 2008 in Buenos Aires, Argentina under the auspices of *Philipp Metcalf*, President of IRPA and *Abel González*, President of the IRPA 12th International Congress.

This year's congress included a special technical session on *Legal Implications of Radiation Protection*, the first of its kind at an IRPA Congress, chaired by the Head of Legal Affairs at the OECD Nuclear Energy Agency, *Mrs. Julia Schwartz*.

Three presentations were given during the session, reflecting the broad range of legal implications that arise from today's radiation protection challenges: *Mr. Stephen Burns*, Deputy General Counsel of the U.S. Nuclear Regulatory Commission, made a presentation on "Public Participation and Public Involvement" that largely reflected the NRC's own experience in this area with observations on the tension that exists between the NRC's ability to implement its standards and public acceptance in general. *Mr. Ludo Veuchelen*, Legal Advisor to the Belgian Nuclear Research Centre focused his presentation on the complexities of the ALARA principle and more particularly on whether it imposes a real legal duty, under both common law and civil law concepts. The last presentation was given by *Mrs. Julia Schwartz* on the liability and compensation regimes that exist at both national and international levels to ensure that where nuclear damage is suffered as a result of an accident, victims will receive adequate compensation for their losses. The session also benefitted from the presence of *Mr. Anthony Baretta*, a nuclear engineer and Associate Chief Administrative Judge (Technical) on the Atomic Safety and Licensing Board. As the session "*commentator*", he participated in discussions and provided participants with observations on what had been covered in the various presentations.

The primary purpose of IRPA is to provide a forum whereby those engaged in radiation protection activities may communicate more readily with each other and advance radiation protection in many parts of the world. The activities cover science, medicine, engineering, technology and law in order to provide for the protection of humans and the environment from the hazards caused by radiation, and thereby facilitate the safe use of medical, scientific and industrial radiological practices for the benefit of mankind, see www.irpa.net.

The International Congresses of IRPA have been held approximately every four years since 1966. The 13th session will be organised in 2012 in Glasgow, United Kingdom. Given the keen interest in legal issues demonstrated by the radiation protection community during the IRPA 12 Legal Session, it is expected that an even more comprehensive session devoted to the legal implications of radiation protection will be organised for IRPA 13.

International School of Nuclear Law

2009 Session of the ISNL

The 9th Session of the International School of Nuclear Law (ISNL) will take place from 24 August to 4 September 2009 in Montpellier, France.

The ISNL was established in 2001 by the University of Montpellier 1 and the NEA and aims to provide a high-quality, intensive educational programme in all aspects of international nuclear law.

Application forms for this session may be downloaded from the NEA website at www.nea.fr/html/law/isnl/index.html and must be submitted before 31 March 2009.

World Institute for Nuclear Security

World Institute for Nuclear Security launched (2008)

On 29 September 2008, a new organisation to strengthen the physical protection and security of nuclear and radioactive materials and facilities was launched in Vienna, Austria.[4] The World Institute for Nuclear Security (WINS) is expected to bring together nuclear security experts, the nuclear industry, governments and international organisations to focus on rapid and sustainable improvement of security at nuclear facilities around the world.

On-the-ground security experts will collect security practices for dealing with nuclear facilities and materials and share that information to improve security worldwide. WINS's initial activities will concentrate on the most dangerous materials (highly enriched uranium and plutonium), but its scope of work includes both weapons-usable material and radioactive materials.

The Nuclear Threat Initiative (NTI), the Institute for Nuclear Materials Management and the U.S. Department of Energy worked together to launch WINS in close co-ordination with the International Atomic Energy Agency (IAEA). *Dr. Roger Howsley*, former Director for Security, Safeguards and International Affairs at British Nuclear Fuels, serves as WINS's first executive director.

More information is available at www.wins.org.

World Nuclear University

Summer Institute and regional sessions (2008)

The fourth Summer Institute of the World Nuclear University (WNU-SI) took place at Ottawa University in Canada from 5 July to 15 August 2008. The WNU-SI aims at building future global leadership in fields of nuclear science and technology. The 6-week programme focuses on presentations from leading world experts on the full range of topics relevant for the future of nuclear energy. This year's programme was attended by approximately 100 young professionals coming from industry and regulatory authorities from all over the world.

The Legal Affairs Offices of the OECD Nuclear Energy Agency and of the International Atomic Energy Agency jointly prepared sessions focusing on nuclear law in general, liability for damage, environmental concerns and nuclear security. Short scenarios were also developed to transform and apply the lessons learned from the presentations.

In 2008, the WNU also organised regional sessions in Brazil, Argentina, South Africa, China, Korea and Turkey. These 1-week orientation courses aim to inform an audience of graduate students and nuclear professionals on the key issues in the nuclear energy sector. Emphasis was placed on the nuclear fuel cycle, design management, project management and financing, nuclear law, nuclear

4. NTI Press Release of 28 September 2008, available at www.nti.org/c_press/release_WINS_092908.pdf.

economics, nuclear transport, radiation protection and radioactive waste management. The OECD/NEA Legal Affairs Section participated in all regional seminars, except for South Africa.

The WNU is supported by the World Nuclear Association, the OECD/NEA, the World Association of Nuclear Operators and the International Atomic Energy Agency. Further information is available at www.world-nuclear-university.org.

The next WNU-SI will be held at the University of Oxford, England from 5 July to 15 August 2009.

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