NUCLEAR LAW
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Contents

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ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Pursuant to Article 1 of the Convention signed in Paris on 14th December 1960, and which came into force on 30th September 1961, the Organisation for Economic Co-operation and Development (OECD) shall promote policies designed.

- to achieve the highest sustainable economic growth and employment and a rising standard of living in Member countries, while maintaining financial stability, and thus to contribute to the development of the world economy,
- to contribute to sound economic expansion in Member as well as non-member countries in the process of economic development, and
- to contribute to the expansion of world trade on a multilateral, non-discriminatory basis in accordance with international obligations.

The original Member countries of the OECD are Austria, Belgium, Canada, Denmark, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden Switzerland Turkey, the United Kingdom and the United States The following countries became Members subsequently through accession at the dates indicated hereafter Japan (28th April 1964), Finland (28th January 1969) Australia (7th June 1971), New Zealand (29th May 1973), Mexico (18th May 1994), the Czech Republic (21st December 1995) and Hungary (7th May 1996) The Commission of the European Communities takes part in the work of the OECD (Article 13 of the OECD Convention)

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 all European Member countries of OECD as well as Australia, Canada Japan, Republic of Korea Mexico and the United States The Commission of the European Communities takes part in the work of the Agency

The primary objective of NEA is to promote co-operation among the governments of its participating countries in furthering the development of nuclear power as a safe environmentally acceptable and economic energy source

This is achieved by

- *encouraging harmonization of national regulatory policies and practices with particular reference to the safety of nuclear installations protection of man against ionising radiation and preservation of the environment radioactive waste management, and nuclear third party liability and insurance*
- *assessing the contribution of nuclear power to the overall energy supply by keeping under review the technical and economic aspects of nuclear power growth and forecasting demand and supply for the different phases of the nuclear fuel cycle*
- *developing exchanges of scientific and technical information particularly through participation in common services*
- *setting up international research and development programmes and joint undertakings*

In these and related tasks NEA works in close collaboration with the International Atomic Energy Agency in Vienna with which it has concluded a Co-operation Agreement as well as with other international organisations in the nuclear field

Foreword

Following upon the Extension Conference for the Nuclear Non-Proliferation Treaty (NPT), the issues associated with the non-proliferation of nuclear weapons and other devices is still with us today One of the articles in this latest edition of the Nuclear Law Bulletin addresses the state of international law in this field while another studies the question of strengthening the powers of the International Atomic Energy Agency (IAEA) A third article deals with a closely related subject, that being "consent rights" in the context of the new nuclear co-operation Agreement between the United States and the European Community

Progress made in Eastern Europe on matters of nuclear law is also covered in this new edition. In particular, we are pleased to reproduce, in the Supplement, the text of the Russian Federation's Law on the Use of Nuclear Energy

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Inspection for Clandestine Nuclear Activities: Does the Nuclear Non-Proliferation Treaty Provide Legal Authority for the International Atomic Energy Agency's Proposals for Reform?

by George Bunn*

This article analyses whether the Nuclear Non-Proliferation Treaty (NPT) provides legal authority for International Atomic Energy Agency (IAEA) efforts to gain more information and more intrusive inspections to assure that non-nuclear-weapon States (NNWS) that have joined the NPT are not attempting to make nuclear weapons in violation of that Treaty

A. THE BACKGROUND OF THE IAEA'S EFFORT TO STRENGTHEN ITS SAFEGUARDS

Before the discovery of Iraq's clandestine nuclear-weapon program, the IAEA's primary inspection objective under the NPT was to see whether states subject to inspection were doing what they had reported to the IAEA that they were doing As a matter of practice not law, IAEA inspectors almost never looked for clandestine nuclear activities – those not reported to the IAEA in the State's "declarations" of its nuclear activities[1]

With the disclosure that Iraq, an NPT member, had failed to declare the nuclear activities related to its clandestine pursuit of nuclear weapons, the IAEA's practice changed Authority for the IAEA's sweeping inspections in Iraq came from UN Security Council resolutions rather than from the safeguards provisions of the NPT But its experience in Iraq provided both great momentum and useful experience for its efforts to strengthen its safeguards system for the NPT, efforts that had begun before the Gulf War

When South Africa joined the NPT, the IAEA, acting on a general invitation from the government, requested permission to visit locations connected with South Africa's nuclear weapons program that were not listed in the government's declarations of civilian facilities to be safeguarded

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* George Bunn is Consulting Professor at Stanford University Center for International Security and Arms Control He was the first General Counsel of the US Arms Control and Disarmament Agency a member of the US delegation that negotiated the NPT during the 1960s and US Ambassador to the Geneva Conference on Disarmament in 1968 He has also served as a lawyer for the US Atomic Energy and Nuclear Regulatory Commissions, as a member of a Washington law firm and was Professor and Dean of the University of Wisconsin Law School The ideas expressed herein are the responsibility of the author The author wishes to thank David Fischer Laura Rockwood and David Sloss for very useful comments and criticisms of an earlier draft of this paper

1 See e g Richard Hooper Strengthening IAEA Safeguards in an Era of Nuclear Cooperation *Arms Control Today* (November 1995) pp 14-18 David Fischer *Towards 1995 The Prospects for Ending the Proliferation of Nuclear Weapons* (Dartmouth UNIDIR 1993) pp 71-75 79 There were however occasional inspections of *declared* facilities to assure against clandestine production of fissionable material

Its requests to inspect these undeclared sites were granted However, the Democratic People s Republic of Korea (DPRK), after initial co-operation, denied the IAEA's request for inspection of two undeclared locations to gain further information about discrepancies found as the result of inspecting declared activities The DPRK refused to accept the inspectors even when the request became a demand backed up by the IAEA Board of Governors, a demand based upon DPRK s safeguards agreement which had been negotiated pursuant to the NPT and the IAEA s Statute and model safeguards agreement[2] Evidence supporting the IAEA's demand came in part from environmental monitoring of a kind the IAEA is now institutionalising in its program to strengthen safeguards inspections

The UN Security Council, though requesting the DPRK to accept the Board s demand called for consultations rather than imposing economic sanctions for refusal of the demand[3] Negotiations with DPRK resulted, it permitted inspection of *declared* facilities while they continued In October of 1994, it agreed to inspection of the *undeclared* locations after a few years when a significant portion of the reactor it was promised by the US , South Korea and Japan had been completed[4] Until then it will remain in non-compliance with the IAEA's demand Based upon their actions so far however both the Security Council and the DPRK have implicitly accepted the legitimacy of the IAEA demand

Meanwhile, the IAEA had begun strengthening its safeguards capability for all NNWS NPT members It added to its sources of information beyond the existing declarations by NPT members and the IAEA inspections of their declared activities It established a comprehensive state-by-state nuclear activity data base including information (besides that from declarations and inspections) from open news sources governmental reports on imports and exports satellite photographs and other intelligence information given to it by member States[5] This data base can become part of the "triggering" evidence for inspections, it may suggest the existence and location of undeclared nuclear activities that could then be the subject of inspection requests In addition, IAEA inspectors have improved their technical ability to gain information about possible undeclared nuclear activities during regular inspections at declared sites[6] Finally, the IAEA Board has confirmed its right to engage in special inspections at undeclared locations when the information available to it is not adequate for the Agency to fulfil its responsibilities" to assure that no nuclear material is diverted to nuclear explosive devices[7]

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2 IAEA Board decision GOV/2636 IAEA Press Release February 25 1993 PR 93/5 IAEA Press Release April 1 1993 PR 93/8 The model safeguards agreement in question was IAEA Information Circular 153 (INFCIRC 153) discussed below

3 UN Security Council Resolution 825 (1993) UN Press Release SC/56114

4 Agreed Framework between the USA and DPRK of October 21 1994 DPRK agreed that when a significant portion of the LWR (Light Water Reactor) project is completed but before delivery of key nuclear components the DPRK will come into full compliance with its safeguards agreement with the IAEA (INFCIRC/410) including all steps that may be deemed necessary by the IAEA following consultations with the Agency with regard to verifying the accuracy and completeness of the DPRK s initial report [declaration] on all nuclear material in the DPRK

5 See Hans Blix Against the Spread of Nuclear Weapons The Safeguards System of the IAEA *NATO Review* (September 1995) p 15 Mohammed El Baradei IAEA Verification System at a Cross Roads Address to Carnegie Endowment Conference on Nuclear Non Proliferation January 30-31 1995 Washington DC

6 US Congress Office of Technology Assessment *Environmental Monitoring for Nuclear Safeguards* (September 1995)

7 INFCIRC/153 paras 1 and 73(b) See David Fischer 1989 95 Radical Changes in IAEA Safeguards *The Non-Proliferation Review* Vol 3 No 2 Winter 1996 forthcoming Lawrence Scheinman *Assessing the Nuclear Non Proliferation Safeguards System* (Atlantic Council of the US Occasional Paper October 1992)

B THE IAEA'S "PROGRAMME 93+2"

Beginning in 1993, the IAEA Secretariat began putting all this together with other new ideas in a comprehensive plan called "Programme 93+2" – with the intention of seeking Board approval of the plan in 1995 At meetings in March and June of 1995, the IAEA Board of Governors endorsed the general direction of the Secretariat's effort to assure that what non-nuclear-weapon State (NNWS) NPT Parties told the IAEA in the future about their nuclear activities was not only *correct* as far as it went, but that it was *complete* in the sense that there were no undeclared, clandestine nuclear activities[8] The Board also took note that many of the new measures proposed were within the IAEA's existing legal authority as expressed in safeguards agreements with NNWS Parties to the NPT Procedures for implementation of these "Part 1" measures by the Secretariat have already begun "Part 2" measures are those that would require "complementary" authority according to the Secretariat, that is, they need some new legal instrument to make them obligatory for States These measures have been proposed to the IAEA Board in an informal working document, which also contains a draft of a new legal instrument

There is less controversy about Part 1 than Part 2 measures But the two parts are closely interrelated and NPT authority for both will be discussed in this article The basic issue here is whether the NPT authorises the IAEA to seek more information

The new measures first seek additional information – information which might trigger future requests for more intrusive inspections For example, the new measures ask for additions to the declarations provided by NNWS NPT Members showing "past nuclear activities" (a Part 1 measure), nuclear research and development activities whether or not they involve "nuclear mtaerial" (if not, then Part 2), and activities and equipment at sites in the vicinity of locations already safeguarded, and at other sites having activities and equipemnt functionally related to nuclear fuel cycle operations (Part 2)[9]

A second major source of new information that could be the basis for an inspection request would be "environmental monitoring," that is collecting samples of water from streams and rivers, samples of outdoor air, plant life, dust and dirt, and samples of deposits on walls, floors and equipment at indoor nuclear-related facilities These samples would be analysed in IAEA or other laboratories to see whether they contained, for example, isotopes of various elements found only in connection with nuclear activities[10]

If the samples were taken during on-site inspections already permitted by existing safeguards agreements, they would be included in Part 1 and no additional legal authority would be required If they are to be taken at new sites, new authority would of course be required to visit that site – unless the state voluntarily invited the visit as South Africa did or access was provided pursuant to an IAEA demand for a special inspection Thus the authority for environmental monitoring is dependent upon whether the site currently may be inspected such samples are already sometimes taken at locations now subject to inspection

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8 In March the Board approved the following statement [T]he safeguards system for implementing comprehensive safeguards agreements should be designed to provide verification by the Agency of the correctness and completeness of the States declarations so that there is credible assurance of the non-diversion of nuclear material from declared activities and the absence of undeclared activities IAEA General Conference Document GC(39)17 of August 22 1995 Annex 3 pp 58 71 See Hooper *op cit*

9 IAEA Document GC(39)/17 *op cit* Hooper *op cit*

10 Hooper *op cit* US Congress Office of Technology Assessment *op cit*

In addition to these new sources of information, the "93+2 ' plan calls for access to more sites than the existing safeguards agreements do, for example, to locations beyond the "strategic points in the nuclear fuel cycle now subject to routine inspections Existing safeguards agreements with the IAEA permit inspection beyond "strategic points" before a facility is operated in order to check the design provided by the inspected nuclear organisation against the actual facility as built For ad hoc inspections, going beyond strategic points is also now permitted Where that is so of course access would be a Part 1 measure For routine inspection of non-strategic points in an operating nuclear facility, however Part 2 approval would be required – except where authorised under the provisions for special inspections

Inspection of the nuclear-related activity sites not previously declared but to be declared pursuant to Part 2 would follow as the result of the new legal obligation to provide additional information in a revised declaration Beyond this is the question whether the IAEA inspectors may permissibly search for nuclear weapons activities at sites at which no nuclear-related activity or nuclear material has been reported[11]

Another new measure is unannounced (no-notice) inspections These are currently permitted at strategic points though they do not occur often No-notice inspections at other points and at locations without strategic points would, of course, require Part 2 approval[12]

The legal issue presented by the "93+2" plan and discussed below is whether the IAEA has authority under the NPT to demand the new information and new inspections

C DOES THE NPT PROVIDE AUTHORITY FOR THE IAEA REQUESTS FOR MORE INFORMATION AND MORE INTRUSIVE INSPECTIONS?

The most important NPT language on safeguards is

> *"Each non-nuclear-weapon State Party to the Treaty undertakes to accept safeguards as set forth in an agreement to be negotiated and concluded with the International Atomic Energy Agency in accordance with the Statute of the International Atomic Energy Agency and the Agency's safeguards system, for the exclusive purpose of verification of the fulfilment of its obligations assumed under this Treaty with a view to preventing diversion of nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices "*[13]

This language establishes the broad standard and purpose for the safeguards that NNWS members must accept in an agreement with the IAEA In the context of the 93+2 measures it raises the following questions

1 What standards are contemplated by "in accordance with the Statute of the International Atomic Energy Agency and the Agency's safeguards system"?

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11 See G Bunn and Roland M Timerbaev *Nuclear Verification under the NPT What Should it Cover How Far May it Go?* (PPNN Study Five U of Southampton 1994)

12 For the terms of Programme 93+2 see IAEA Doc GC(39)/17 Annex 4 pp 3 8 *op cit*

13 NPT Article III 1 The remaining two sentences of this key paragraph are Procedures for the safeguards *required* by this Article shall be followed with respect to *source or fissionable material* whether it is being produced processed or used in any principal nuclear facility *or is outside* any such facility The safeguards *required* by this article shall be applied on all *source or fissionable material* in all *peaceful* nuclear activities within the territory of such State under its jurisdiction or carried out under its control *anywhere* Emphasis has been added in each of the three sentences of Article III 1

2 What "obligations assumed under this Treaty" is it the purpose of safeguards to verify?

3 What limitations does the NPT language impose on IAEA inspection? For example, does seeking information about, or access to, activities that do not involve "source of special fissionable material" exceed the IAEA's authority? Is inspection of undeclared facilities permissible? Must the IAEA give notice before any inspection can be carried out?

Each of these questions will be discussed in turn using a standard technique for treaty interpretation The Vienna Convention on the Law of Treaties states that a treaty is to be interpreted "in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in light of its object and purpose " Also to be taken into account is "any subsequent agreement between the Parties regarding the interpretation of the treaty or the application of its provisions" and "any subsequent practice in the application of the treaty which establishes the agreement of the Parties regarding its interpretation"[14]

The most important "subsequent agreement" and "subsequent practice" here is the 1972 IAEA model safeguards agreement, IAEA Information Circular 153 (INFCIRC/153) and the practice, since then, of using it as the basis for negotiation of safeguards agreements with NNWS NPT Parties[15] INFCIRC/153 was negotiated pursuant to Article III of the NPT by more than 45 countries, almost all of which had signed the NPT (or later did so) and had become Parties or intended to do so if the negotiation of INFCIRC/153 was successful While it is not a treaty and was not formally signed by the Parties, it was accepted by them as the model for what should be included in the safeguards agreements of NNWS NPT Parties The practice following its negotiation was to follow its terms[16] Thus, whether it is a subsequent agreement or subsequent practice, it is relevant to the interpretation of Article III

Of course, neither INFCIRC/153 nor the practice it instituted is based exclusively on interpretation of Article III That Article was the NNWS NPT Parties "agreement to agree" at some later time to safeguards agreements that complied with Article III's standards[17] These standards were broad enough to permit considerable negotiating room based upon practical factors and negotiating leverage, not just differing interpretations of Article III Thus, as we will see, INFCIRC/153 and the practice do not always reflect the breadth of Article III's scope, some of the limitations on inspections came about for reasons other than Article III's language

The Vienna Convention also permits reference to the "preparatory work of the treaty and the circumstances of its conclusion" as "supplementary means of interpretation" to confirm the meaning derived either from its language or from subsequent agreement or practice This negotiating history may also be used when the language of the treaty and subsequent agreements are "ambiguous or obscure" or lead to a result that is "manifestly absurd or unreasonable"[18]

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14 Vienna Convention on the Law of Treaties of 1969 Article 31 Governments such as the United States that are not formal parties to this Convention nevertheless generally accept this provision as declaratory of customary international law and practice

15 The Structure and Content of Agreements between the Agency and States Required in Connection with the NPT, IAEA Document INFCIRC/153 (corrected)(1972)

16 See David Sloss It s Not Broken So Don t Fix It The IAEA Safeguards System and the NPT *Virginia Journal of International Law* Vol 36 forthcoming in 1996

17 See G Bunn *Arms Control by Committee Managing Negotiations with the Russians* (Stanford University Press 1992) pp 94 103

18 Article 32 of the Vienna Convention

For the questions discussed below, this article will follow the procedure suggested by the Vienna Convention looking at the treaty language first, then, if need be, at INFCIRC/153 and the practice based upon it, and then where pertinent, at the "preparatory work" or negotiating history

1 What standards are contemplated by "in accordance with the Statute of the International Atomic Energy Agency and the Agency's safeguards system" in Article III 1 of the NPT?

First, the "Statute of the International Atomic Energy Agency,' the treaty that created the IAEA The Statute's Article III 5 authorises the Agency to establish safeguards "to ensure that special fissionable material and other materials, services, equipment, facilities and information 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 " This treaty language was in existence at the time of the negotiation of the NPT, and is part of what NPT's Article III 1 clearly refers to[19]

Second, "the Agency's safeguards system" This language does not appear in the IAEA Statute or in INFCIRC/153 However, the model safeguards agreement in effect when the NPT was negotiated was called "The IAEA Safeguards System," INFCIRC/66[20] Thus the Agency s safeguards system ' in Article III 1 referred, in the first instance, to safeguards based upon INFCIRC/66 Though INFCIRC/66 has usually been applied to one or more *specific* nuclear projects rather than to *all* nuclear activities carried out by a State, NPT Article III 1 dealt with that historical problem Its last sentence required the application of safeguards on "all source or special fissionable material in all peaceful nuclear activities within the territory of such State [a NNWS NPT Party] under its jurisdiction, or carried out under its control anywhere " Thus, an agreement with the IAEA by a NNWS NPT Party based on INFCIRC/66 (or a later substitute for INFCIRC/66) would be applied to all nuclear activities of the Party and was what was meant by an agreement in accordance with the Agency's safeguards system"

This is confirmed by the "preparatory work" leading to the agreement on Article III 1 The phrase "safeguards system" was discussed first in August 1967 during informal talks between U S and Soviet delegations dealing with possible language for Article III[21] A draft article from the U S delegation for these negotiations would have required NNWS to negotiate an agreement with the IAEA for the application of safeguards "[22] It did not originally set out any standard for safeguards such as that later agreed to "in accordance with the Statute of the International Atomic Energy Agency and the Agency's safeguards system " This was because some US NATO allies in Euratom

19 The NPT language also referred to the special article of the IAEA Statute dealing with safeguards Article XII which will be discussed below In addition it of course accepted the Statute s provisions on how the IAEA is governed as far as safeguards are concerned For example the general decision making body is the Board of Governors (35 members) and it can act by majority vote The General Conference (all members) has specified but limited powers For example it elects the Governors and approves the Director General Decisions on 93+2 have been and will be taken largely by the Board See Sloss *op cit*

20 See INFCIRC/66 "The Agency s Safeguards System (1965) as well as INFCIRC/66/Rev 1 (1966) and INFCIRC/66/Rev 2 (1968) all with the same title Paul C Szasz *The Law and Practices of the IAEA* (IAEA Legal Series No 7 1970) pp 554 55 557 David Fischer and Paul Szasz *Safeguarding the Atom A Critical Appraisal* (SIPRI 1985) Appendix IV Mohammed M El Baradei Edwin Inwogugu and John M Rames *The International Law of Nuclear Energy Basic Documents* (Kluwer 1993) Vol 2 p 1678

21 For the history of these *ad referendum* negotiations see G Bunn *Arms Control by Committee op cit* pp 96-100

22 US Delegation working paper of 28 August 1967

wanted either no review by IAEA of the Euratom safeguards on their nuclear activities, or ability to negotiate with the IAEA about such review unfettered by any NPT standards[23]

To provide a standard for IAEA safeguards, the Soviet experts countered the Americans' draft with the addition of a sentence stating that safeguards should apply "as provided for in the Statute of the IAEA and the document on safeguards"[24] The US delegation objected to this language's apparent limitation to INFCIRC/66 alone ("the document on safeguards") arguing that INFCIRC/66 would undoubtedly be revised or replaced at some future time, that such a change might require amendment of the NPT when INFCIRC/66 was changed unless the language "the document" was replaced, and that a more general reference should be used[25] After further give and take, the Soviet phrase referring to the IAEA Statute and document was changed in the negotiators' draft to require each NNWS NPT Party simply to "accept IAEA safeguards"[26] After lengthy talks with US allies and then again with the Soviets, the United States suggested language requiring each NNWS to undertake "to accept safeguards, as set forth in an agreement to be negotiated and concluded with the IAEA in accordance with the statute of the IAEA and the Agency's safeguards system ," the present language of the first sentence of in Article III 1[27]

The result is that "safeguards system ' in Article III 1 must be interpreted as referring to INFCIRC/66 or substitutes for it such as INFCIRC/153 The object was to gain safeguards as effective on all nuclear activities of NNWS NPT Parties as INFCIRC/66 was on activities to which it was applicable in 1967 when Article III 1 was negotiated At the same time, however, the safeguards each NNWS would actually accept would depend upon future negotiations between the NNWS and the IAEA As the United States told its allies, ' the new language avoids calling the NPT safeguards "IAEA safeguards " It makes clear, of course, that they must be in accordance with the IAEA Statute and safeguards system There is considerable flexibility in both"[28]

By 1968, a substitute for INFCIRC/66 for NNWS NPT Parties was anticipated, particularly by countries having Euratom safeguards But INFCIRC/66 was still the basic IAEA "safeguards system" and the most appropriate existing standard available to all the countries then considering joining the NPT In several respects, it authorised more intrusive and more frequent inspections than INFIRC/153 – which came only after long negotiations For example, it permitted "special inspections,' for non-routine checks without any stated limitation on location, when "[a]ny unforeseen circumstance requires immediate attention"[29] INFCIRC/153's comparable provision requires that if the IAEA Secretariat determines that the information already supplied "is not adequate ', it may seek a special inspection, and if the state to be inspected objects, the Secretariat may appeal to the Board which may, if prompt action is needed, decide that the inspection "is essential and urgent in order to ensure verification that nuclear material subject to safeguards is not diverted to nuclear weapons or other nuclear explosive devices "[30]

Article III 1 did not require this change in INFCIRC/153 from INFCIRC/66 The change came about as result of objections to INFCIRC/66's broader authority during the negotiations which produced INFCIRC/153 However, as an interpretation of Article III, the broader authority of

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23 See G Bunn *Arms Control by Committee op cit* pp 87 103
24 Memorandum of August 28, 1967 G Bunn to W C Foster
25 Memorandum of August 29 1967 G Bunn to W C Foster
26 Working paper of September 1 1967
27 US Aide Memoire of November 13 1967 sent to US allies
28 US Aide Memoire of November 13 1967 *op cit*
29 Para 53(b)
30 Para 73 18

INFCIRC/66 would be as valid for NPT inspections as the more limited authority of INFCIRC/153 Clearly, Article III 1 s requirement of safeguards in accordance with the IAEA 'Statute and "safeguards system' permitted broader inspection authority than was actually utilised in INFCIRC/153

2 What "obligations assumed under this Treaty " (in the language of Art.III 1) is it the purpose of safeguards to verify?

Article III 1 states that safeguards are required of a NNWS NPT Party "for the exclusive purpose of verification of the fulfilment of its obligations assumed under this Treaty with a view to preventing diversion of nuclear energy from peaceful purposes to nuclear weapons or other nuclear explosive devices' What NPT obligations are designed to "prevent diversion of nuclear energy to nuclear explosive devices ?

One such obligation is clearly the NNWS NPT members obligation in NPT's Article II not to manufacture" such devices[31] INFCIRC/153 confirms the focus of safeguards on this Article II prohibition It says that the "objective of safeguards" under the NPT should be "the timely detection of diversion of significant quantities of nuclear material from peaceful nuclear activities to the manufacture of nuclear weapons or of other nuclear explosive devices or for purposes unknown and deterrence of such diversion by the risk of early detection"[32] The obligation not to manufacture is broad, it includes many steps in the direction of manufacture if the purpose is ultimately to manufacture a nuclear explosive device[33]

What other obligations, if any, are included? The pertinent language of Article II goes beyond manufacture "not to manufacture or otherwise acquire nuclear weapons or other explosive devices Is the obligation not to "otherwise acquire" nuclear explosive devices one of the Article III 1 "obligations assumed under this Treaty with a view of preventing diversion of nuclear energy from peaceful uses to nuclear explosive devices"?

The preparatory work confirms that verifying the obligation not to manufacture nuclear weapons is the main purpose of safeguards, but suggests that something more could be included In the first informal US -Soviet delegation working group on options for Article III which the delegations might recommend to their governments, the Americans suggested a draft containing language much like that now in Article III 1 except that the obligations to be verified were those 'assumed under this Treaty not to divert source or special fissionable material to nuclear weapons ' rather than assumed under this Treaty with a view to preventing diversion of nuclear energy from peaceful uses to nuclear weapons "[34] The Russians countered by suggesting the addition to the American delegation s language of references to "Articles I and II ' before "this Treaty If this had been accepted 'obligations assumed under Articles I and II of this Treaty not to divert ' could have included for example, Article I obligations of NWS not to transfer control of nuclear weapons to NNWS, and Article II obligations of NNWS not to receive control of such weapons

At that time, there were many American nuclear weapons deployed on the territory of American allies which were under US control in peacetime, but might not be in the event of war The NATO arrangements for the deployment and possible use of US nuclear weapons in defence of Western Europe against an attack by the Soviet Union and its allies had been one of the things the Soviets had

31 See Bunn and Timerbaev *op cit* pp 9-10
32 INFCIRC/153 para 28
33 See Bunn and Timerbaev *op cit supra* pp 3-8
34 US delegation working paper of 28 August 1967

earlier sought to prohibit through the NPT[35] The Americans suspected that the Soviet suggestion that the IAEA safeguard American control of US nuclear weapons deployed in Europe was another attempt to challenge NATO nuclear arrangements, they therefore objected to any reference as broad as "Articles I and II' to define the obligations whose observance the IAEA was to verify[36]

As a substitute for the Soviet delegation's suggestion, the Americans proposed that the "obligations" that safeguards were to verify should be those "not to manufacture nuclear weapons or other nuclear devices " The Soviet experts refused to accept this, arguing that it wasn't broad enough, it might not, they said, cover safeguards on reprocessing or storage of fissionable materials since that was not the "manufacture" of nuclear weapons[37] They accepted that the ultimate purpose of safeguards was to detect and thereby deter the production of nuclear weapons, and both sides wanted to apply safeguards to all nuclear-related activities that might be steps toward the final assembly of nuclear weapons Later the Soviet delegation proposed alternative language as a compromise NNWS NPT members would accept safeguards "with a view to preventing diversion of *nuclear energy* from peaceful uses to nuclear weapons or other nuclear explosive devices for the exclusive purpose of verification of the fulfilment of the obligations assumed under this Treaty " Still later this sentence was rearranged and included in the first sentence of Article III 1 the "exclusive purpose" of safeguards is to verify the fulfilment of "obligations assumed under this Treaty with a view to preventing diversion of *nuclear energy* from peaceful uses to nuclear weapons or other nuclear explosive devices " (Emphasis added in both drafts)

The basic purpose of safeguards is thus not to verify which allied country will control nuclear weapons in the event of war but the NNWS' obligation not to manufacture nuclear explosive devices, using manufacture in a broad enough sense to cover many steps in the direction of final assembly of a weapon That was confirmed in explanations of Article III to the Geneva Disarmament Conference by Soviet and American delegations[38] This means inspecting early steps that could lead to the production of explosive nuclear material in, for example, plants for plutonium separation, uranium enrichment or fuel fabrication as well as in reactors and nuclear-material storage facilities, all for the purpose of assuring that the plutonium or enriched uranium is not diverted to nuclear explosives INFCIRC/66 and 153 both include provisions for inspection of reactors and other fuel cycle facilities Moreover, since the scope of the Article II obligation not to "manufacture" nuclear explosives is broad enough to include not only these facilities but steps *before the final assembly* of a nuclear explosive device, the IAEA is authorised by Article III 1 to inquire about and inspect for those steps[39]

Do the obligations to be verified go beyond the obligation not to "manufacture", to include at least some of the obligation "not to otherwise acquire?" The "objective" of NPT safeguards, according to INFCIRC/153's interpretation of Article III is timely detection of diversion to the "manufacture" of nuclear explosive devices "or for purposes unknown"[40] Moreover, the purpose of the Russian change of the word "material" to "energy" in the first sentence of Article III 1 was clearly to broaden the obligation to be verified beyond "manufacture" if that word was used in the narrow sense of actual assembly of nuclear weapons Yet whether anything beyond "manufacture" in the

35 See e g statement by US Representative to Geneva Disarmament Conference G Bunn of July 19 1966 ENDC PVOL.274 reprinted in US ACDA *Documents on Disarmament 1966* pp 455 60

36 Memorandum of August 30 1967 G Bunn to W C Foster

37 Memorandum of August 30 1967 *op cit*

38 Statements by Soviet Representative Roshchin ENDC/PVOL 325 and 370 reprinted in ACDA *Documents on Disarmament 1967* pp 347 351 118 and 183 US delegation reporting cable Geneva s 602 to State Dept p 3 Bunn & Timerbaev *op cit* p 10

39 Bunn & Timerbaev *op cit* pp 3 15

40 INFCIRC/153 para 28

broad sense (i e including various steps having weapons as their ultimate goal) is to be verified is unclear from the treaty language, from its interpretation by the parties in INFCIRC/153 and from the preparatory work of the negotiations It therefore is up to the parties to provide the answer in their negotiation of safeguards agreements with the IAEA

3 Does NPT language suggesting that safeguards focus on "strategic points" to safeguard 'source and special fissionable material" to prevent diversion from "peaceful uses" limit the scope of the IAEA's inquiry to strategic points in declared peaceful activities utilising nuclear material (shorthand for "source or special fissionable material" in Article III)?

(a) Limitation to "peaceful" nuclear activities?

As we have seen, in Article III 1 NNWS NPT members undertake to "accept safeguards as set forth in an agreement' to be negotiated with the IAEA "for the exclusive purpose' of verification of the NPT obligations assumed "with a view to preventing diversion of nuclear energy from *peaceful* uses" to nuclear explosives According to the Vienna Convention on the Law of Treaties peaceful should be construed in "light of its object and purpose" in the NPT

In Articles II and III, the manufacture of "nuclear explosive devices is to be prevented whether the objective of the manufacturer is the *civilian* one of digging a harbour or the *military* one of destroying an air or naval base Therefore, an *ultimate* civilian use claimed for an explosive device is irrelevant to the purpose of Articles II and III, whether an explosive device is for 'peaceful (meaning here 'civilian') purposes or not, it is prohibited Therefore, the connection of an activity to the manufacture of nuclear explosives must be the focus of inspector concern to achieve the objectives of Articles II and III Thus, the use of "peaceful" in Article III does not prevent inspection of activities susceptible to diversion to explosives just because the party being inspected insists that the activities are military[41] To conclude otherwise would clearly frustrate the purpose of Article II of the NPT to prevent the making of nuclear weapons by NNWS Parties

This was confirmed during the drafting of INFCIRC/153 In the first place, the objective of safeguards was changed from the INFCIRC/66 idea of ensuring that nuclear material and facilities were not used in such a way "as to further any military purpose[42] The new objective stated in INFCIRC/153 was the detection of diversion of nuclear material from "peaceful nuclear activities to the manufacture of nuclear weapons or other nuclear explosive devices or for purposes unknown" Thus because of the NPT's prohibition, the purpose of safeguards was to detect diversion to nuclear

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41 The drafters of Article III used peaceful as shorthand for the language in Article III A 5 of the IAEA Statute stating that IAEA s safeguards should ensure that nuclear material equipment facilities etc are not used in such a way as to further any military purpose See G Bunn The Nuclear Non Proliferation Treaty *Wis Law Review* Vol 1968 No 3 p 780 To verify that there is no diversion to nuclear explosive devices the IAEA may inspect nuclear material to be used in permitted *military* activities such as naval propulsion reactors In such a case the IAEA Statute does provide legal authority to apply safeguards to achieve the objective foreseen in NPT namely to verify that there is no diversion to nuclear weapons or other explosive devices and to conclude [safeguards] agreements to that effect Document 4 analysis by the Director General submitted to the committee drafting the NPT model safeguards agreement INFCIRC/153 as quoted in Myron Kratzer Review of the Negotiating History of the IAEA Safeguards Document INFCIRC/153 April 1983 (unpublished research report) Thus the ultimate *military* use for the material under safeguards did not prevent inspecting it to prevent diversion to nuclear explosive *devices pursuant to Article III 1 in the territory of non-nuclear weapon States that had consented to such inspections* by joining the NPT

42 Para 2 of INFCIRC/66 quoting Article III A 5 of the IAEA Statute

43 INFCIRC/153 para 28

weapons or other nuclear explosive devices," no matter how peaceful, rather than to any "military purpose"

After a debate about whether "peaceful" in the first and third sentences of Article III 1 precluded safeguards on material to be used for *non-explosive military* purposes such as naval reactors, INFCIRC/153's drafters decided to require safeguards upon nuclear material destined for military reactors while it was in nuclear-material storage facilities, and in uranium separation and plutonium processing plants, "regardless of the past or future use of the nuclear material in question," that is, whether that use was military or civilian[44] It was thought that these plants were inherently non-military even if their total output was used for military purposes If plants capable of producing plutonium or enriched uranium for permitted (i e , non-explosive) military uses were not safeguarded, the chances of detecting diversion to explosive use would have been much reduced Thus, whether or not the material in these plants was for "peaceful" purposes in the non-military rather than the non-explosive sense, it was to be under safeguards in order to prevent diversion to explosives

For a naval reactor, "a nuclear activity which does not require the application of safeguards," INFCIRC/153 permits a temporary withdrawal from IAEA inspection "only while the nuclear material is in such an activity"[45] It requires that the material so used be declared and it prohibits use for the production of nuclear explosives Moreover, it requires the state to make clear that the material's use in such a "*non-proscribed* [i e , non-explosive] *military* activity will not be in conflict with an undertaking the state may have given and in respect of which Agency safeguards apply, that the nuclear material will only be used in a *peaceful* nuclear activity"[46] Thus, in Article III usage, the governing objective of preventing the manufacture of nuclear explosives gave new meaning to an old word "peaceful" can sometimes mean "non-explosive" rather than "non-military"

"Peaceful" in Article III therefore does not inhibit inspectors from safeguarding nuclear material intended for military purposes to see that it is not diverted to explosives, it does not inhibit them, for example, from searching for clandestine nuclear activities at military bases When the DPRK insisted that the sites subject to the Director General s request for special inspection were "military," the IAEA Board agreed with the Director General that such a claim would not exempt those sites from inspection

(b) Limitation to activities where nuclear material is present?

Article III 1 and NPT safeguards agreements focus primarily but not exclusively on nuclear material As we have seen, Article III's first sentence requires safeguards for the purpose of verifying NPT obligations intended to prevent diversion of "nuclear energy," not material, to nuclear explosives The second sentence says that the safeguards required by the first apply with respect to "source or special fissionable *material* " The third says these safeguards "shall be applied on all source or special fissionable *material* "[47] And one of the NPT's preambular provisions calls for efforts "to further the application of the principle of safeguarding effectively the flow of source or special fissionable *materials* by use of instruments and techniques at strategic points" (emphasis added in each quotation)

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44 The quotation is from IAEA Official Records 32-37 76 (1971) See Myron Kratzer *op cit* pp 161 64 See also INFCIRC/153 paras 42-46 70-82 and 106

45 Para 14

46 Para 14(a) (*emphasis* added)

47 The full text of these sentences is quoted in footnote 13 above

Except for the reference to "nuclear energy" in the first sentence the one establishing the requirement and describing the purpose of safeguards, the object of all of this language is material But nuclear "energy" was used in the first sentence because it is broader than nuclear "material A dictionary meaning of "energy" includes both "power" and the "resources for producing such power – in the case of nuclear energy, both nuclear fission or fusion and the nuclear materials which fission or fuse[48] In physics, "energy" is the capacity for doing work such as overcoming the resistance of gravity or friction[49] Replacing "material" with the broader word "energy" in the first sentence because the safeguards might otherwise be too limited in scope suggests that inspection may have been intended to detect the diversion of nuclear "power' or "capacity to do work to nuclear explosives – the basic purpose of Article II, whether or not nuclear "material was present at the place of inspection

While this does not negate the primary focus of safeguards on nuclear ' material ' it does suggest that detecting, containing and accounting for such material need not be the only functions of IAEA inspections Moreover, none of Article III's sentences say that the only places that may be inspected are those where nuclear material is present The third sentence comes the closest when it says that safeguards "shall be applied on all" nuclear "material " But it doesn't say safeguards ' shall *only* be applied" on nuclear material Moreover, both the second and third sentences by their terms apply to the "safeguards required by this article", thus pointing to the first sentence as governing--and it uses the word "energy' rather than "material " Thus, while the main focus of Article III is on safeguarding nuclear material, its language does not preclude inspecting items that do not contain such material if the purpose of the inspection is ultimately to detect in a timely fashion whether nuclear material may be diverted to "nuclear explosive devices or for purposes unknown and deterrence of such diversion by the risk of early detection"[50] For example, if nuclear weapons activities not yet involving nuclear material are suspected, they could be subjected to inspection on the ground that they imply a likely future diversion of nuclear material to nuclear explosives and that the IAEA s ability to detect such a diversion early is necessary to deter it from happening

INFCIRC/66 the initial "safeguards system" referred to by Article III 1 also focused its "safeguards' on accounting for "nuclear material"[51] But, in several instances, it authorised inspection for evidence of diversion of material even though no material was expected to be present Thus "routine inspections" could include "audit of records and reports" without limitation as to whether they were co-located with material[52] And "initial inspections" of principal nuclear facilities were to take place before the facilities started to operate, in some cases this meant before nuclear material was installed in them[53] Finally, "special inspections" were authorised if "[a]ny unforeseen circumstance requires immediate action," without any requirement that nuclear material be present at the location inspected[54]

INFCIRC/153 is faithful to this primary focus on "materials ' However it also contemplates some attention to locations where nuclear material may not be present at the time of the visit Indeed the definition of a nuclear "facility", which is subject to regular inspection, includes those locations

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48 The language quoted in the text is from *Webster s Ninth New Collegiate Dictionary* (Merriam Webster 1986) energy

49 *Webster s New Twentieth Century Dictionary* (Unabridged 2nd ed 1979) energy

50 INFCIRC/153 para 28

51 Para 19

52 Para. 49(a)

53 Para. 51(b)

54 Para 53(b)

where an amount greater than one effective kilogram of material "is *customarily* used"[55] Indeed, the list of named facilities subject to inspection does not require that they contain nuclear material at the time of inspection[56] In addition, INFCIRC/153's requirement for early submission of design information for facilities assumes a visit to them *before* they contain nuclear material in order to compare design with final construction[57]

INFCIRC/ 153 explicitly authorises "special" inspections to gain "access to information or locations in addition to the access specified" for routine and *ad hoc* inspections In other words, special inspections may seek access to locations not declared by the state subject to inspection INFCIRC/153 does not, by its terms, require the presence of nuclear material for such an inspection[58]

Clearly INFCIRC/66 and 153 accept circumstances in which inspection can take place even though no nuclear material is present They suggest that inquiry and inspection is authorised by Article III under appropriate circumstances despite the absence of such material

(c) Limitation to nuclear activities that have been declared and are located at "strategic points?'

Article III and the INFCIRC/153 special-inspection provision authorise inquiry about, and inspection of, *undeclared* nuclear activities[59] The Board reaffirmed that conclusion both in the DPRK case and at the March 1995 Board meeting on Programme 93+2[60] At the 1995 NPT Review and Extension Conference, NPT members agreed that the "Agency's capability to detect undeclared nuclear activities should be increased"[61] There seems to be no doubt now that Article III authorises IAEA inquiry about and search for nuclear activities that NNWS NPT members may have failed to declare

In the case of "strategic points," the preamble supports the "application of the principle of safeguarding effectively the flow of source and special fissionable materials by use of instruments and other techniques at certain strategic points " This principle had a major impact on the negotiation of the NPT model safeguards agreement INFCIRC/153 reflects that impact by prohibiting inspectors, during routine inspections, from access to nuclear activities except at strategic points[62] However, by

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55 INFCIRC/153 Para.106 emphasis added

56 The list includes a reactor a critical facility a conversion plant, a fabrication plant, a reprocessing plant, an isotope separation plant or a separate storage installation INFCIRC/153 para. 106

57 INFCIRC/153 paras 8 42 46 48

58 Paras 73 and 77

59 See G Bunn '*Does the NPT Require its NNWS members to Permit Inspection by the IAEA of Nuclear Activities that Have Not Been Reported to the IAEA?* (Stanford U Center for International Security and Arms Control 1992)

60 The Board concluded that existing NPT safeguards agreements had the broad purpose of providing credible assurance of the non-diversion of nuclear material from declared facilities and *absence of undeclared activities* ' IAEA Press Release Vienna March 31 1995 (emphasis added)

61 NPT/CONF 1995/L 5 May 11 1995 In a committee of the conference the participating NPT parties agreed that implementation of NNWS NPT safeguards should be designed to provide for verification by the Agency of the correctness and completeness of a State s declaration so that there is credible assurance of the non-diversion of nuclear material from declared activities and of the absence of undeclared nuclear activities in accordance with Article III paragraph 1 of the Treaty Report of Main Committee II NPT/CONF 1995/MC.II/1 5 May 1995 Para 15 This and much other committee language was not formally adopted by the Conference for unrelated reasons But the text shows no disagreement with this language by the participating NPT Parties

62 Para.76 For the impact of this principle on the negotiation of INFCIRC/153 see David Fischer *Towards 1995 op cit* pp 53 57 It was given extra force by a last minute addition to Article III 3 of a statement that safeguards be implemented in a manner designed to avoid hampering economic or technological development in accordance the principle of safeguarding set forth in the Preamble of the Treaty Germany and some other Euratom members had expressed concern about industrial espionage if IAEA inspectors could go anywhere in a nuclear facility

its terms, the preambular language is a statement of objective, it does not limit safeguards to strategic points at all times and in all circumstances Indeed, INFCIRC/153 designates cases in which the principle is not to be applied[63] Thus, INFCIRC/153 constitutes a negotiated application of the principle, and an interpretation of Article III showing that its language does not require that safeguards be applied only at strategic points Indeed, the authority to inspect undeclared activities would disappear if only the strategic points designated in declared nuclear activities could be inspected Safeguards agreements can thus be supplemented consistent with Article III to permit inspection at other non-strategic places besides those permitted by existing safeguards agreements

(d) Other language affecting the scope of inspections

As pointed out earlier, the first sentence of Article III says that the applicable safeguards for each NNWS NPT member are those set forth in an agreement with the IAEA "in accordance with the Statute" of that Agency That Statute provides that, when "requested by the parties concerned to apply safeguards,' the IAEA is to have "rights and responsibilities to the extent relevant" to the particular "arrangement" calling for verification[64] The IAEA's rights under its Statute include sending inspectors "who shall have access *at all times to all places and data* and *to any person* who by reason of his occupation deals with materials, equipment or facilities which are required by this Statute to be safeguarded "[65] Thus by agreeing to Article III, NNWS NPT members agreed to wide no-notice access to information, places and people – to "the extent relevant' to the NPT's verification In the end the NPT language must therefore be the focus of inquiry, as it has been in this article It contains nothing requiring prior notice of inspections

D CONCLUSION

Legal questions raised by "Programme 93+2" include whether the NPT authorises the IAEA to demand that safeguards agreements with a NNWS NPT Party permit it

a) to require declarations or demand information about activities that are not necessarily associated with nuclear material but may be related to the nuclear fuel cycle or to other steps necessary to making nuclear explosives,

b) to inspect for such activities whether or not "peaceful," declared, or at strategic points, and whether or not prior notice has been given, and to take environmental samples during such inspections

My conclusions are that, in appropriate circumstances, the NPT authorises the IAEA to demand all of these things in a safeguards agreement concluded in accordance with the IAEA Statute' and "safeguards system" for the purpose of verifying the NNWS' NPT promise not to manufacture' nuclear weapons While this standard may not always be clear enough to answer all questions raised by Programme 93+2, it provides adequate scope for interpretation by the parties and the IAEA in their negotiation of safeguards agreements to include all the current 93+2 proposals Indeed, some NNWS parties, Australia for example, have taken the position that the NPT and INFCIRC/153 are broad enough to cover all proposals classed by the Secretariat as Part 2 well as those classed as Part I

63 Paras 71 and 76

64 Article XII of the IAEA Statute

65 Article XII 6 *emphasis* added

Preventing the Proliferation of Nuclear Weapons: 50 Years of Atoms for Peace

By Tom Vanden Borre and Roland Carchon*

1 INTRODUCTION

In the 1930s, much scientific research was carried out on the composition and structure of the nucleus of the atom It was in 1939, on the eve of the second World War that, when carrying out experiments with uranium in Berlin, Hahn and Strassman discovered a strange phenomenon which they were not at the time able to explain Subsequently, this phenomenon was described as nuclear fission, i e the splitting into pieces of a nucleus under the effect of external factors (or spontaneously), liberating a quantity of energy which, compared with the energy sources known at the time, was enormous During the war, scientists warned that nuclear energy could also be used for political and military purposes[1] On 6 and 9 August 1945, two nuclear bombs were used to destroy the Japanese towns of Hiroshima and Nagasaki, killing some 120,000 people

As from the first successfully controlled chain reaction, mankind was faced with two major challenges[2] to avoid using nuclear energy for military purposes, and to ensure that this energy source is used safely There is a risk that human civilisation could be destroyed by a nuclear accident or by the military use of nuclear energy Producing nuclear energy does not only involve the risk of an accident (as at Chernobyl) There are several aspects to nuclear risk

- Safety including safety in nuclear power plants and during transport, and the protection of the public and the environment against the hazards caused by ionizing radiation,
- Security involving the protection of radioactive materials against terrorist or criminal acts,
- Safeguards designed to ensure that nuclear energy is used exclusively for peaceful purposes The concept of "safeguards" can be defined as a system of international measures designed to detect diversion of nuclear material to unauthorised uses[3]

The proliferation of nuclear weapons is only one aspect of the overall nuclear risk Clearly, it is not always easy to draw a dividing line between these different aspects since they influence one other This article will be limited to an analysis of the safeguards system and its associated international measures, and will not deal with safety or security aspects

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1 Leclerq J *L ere nucleaire Le monde des centrales nucleaires* Hachette 1986 p 51

2 Blix H The Dual Challenge of a Nuclear Age *IAEA Bulletin* No 1 1993 p 33

3 Sanders B and Ha Vinh Phuong International Safeguards *Nuclear Law Bulletin* No 18 1976 p 54

The international controls with regard to the peaceful use of nuclear energy are based on two cornerstones Article XII of the Statute of the International Atomic Energy Agency (IAEA) and for the Member States of the European Union, Chapter VII of the Euratom Treaty These safeguards systems enable the production and proliferation of nuclear weapons to be controlled The most important instrument as regards non-proliferation is the Treaty on the Non-proliferation of Nuclear Weapons (NPT) of 1968[4]

This article will concentrate essentially on the NPT (being by far the most universal Treaty) on the IAEA safeguards system and on the system of safeguards applying in the Member States of Euratom[5]

We shall begin with a description of the historical background (Section 2) to the creation of the IAEA and Euratom (2 1) and to the spread of nuclear weapons throughout the world (2 2) We shall then analyse, in Section 3, the treaties designed to limit the spread of nuclear weapons, dealing successively with treaties on the demilitarisation of the *res communis* (3 1), treaties on the non-proliferation of nuclear weapons (3 2), treaties on disarmament (3 3) and treaties dealing with nuclear testing (3 4) Section 4 ("Safeguards Systems for Controlling Fuel") will discuss the role of the IAEA in the safeguards system (Section 4 1 1) and then, naturally, we shall deal above all with the NPT, in particular with the rights and obligations of signatory countries (Section 4 1 2) as well as the role of Euratom (4 2) and the synergy between Euratom and the IAEA (4 3) In Section 5 we shall deal briefly with problem countries This will enable us to draw conclusions from bad experiences and will lead us to discuss a strengthening of safeguards (Section 6) Lastly, in Section 7 we shall assess the safeguards system after approximately a quarter century's operation

2 HISTORIAL BACKGROUND

This section deals first with the political situation in the years leading up to the creation of the IAEA and Euratom (2 1), before describing the spread of nuclear weapons throughout the world from Hiroshima and Nagasaki to the present day (2 2)

2 1 Creation of IAEA and Euratom

We the peoples of the United Nations,
Determined
to save succeeding generations from the scourge of war which twice in our lifetime has brought untold sorrow to mankind

Thus begins the Charter of the United Nations of 26 June 1945 On 6 and 9 August, two atomic bombs destroyed Hiroshima and Nagasaki In January 1946, the General Assembly of the United Nations met for the first time and addressed the problem caused by the discovery of atomic energy and the use of nuclear weapons[6] Reflecting the concern of the international community in this

4 There are other treaties relating to the non-proliferation of nuclear weapons such as the Treaty for Prohibition of Nuclear Weapons in Latin America (Tlatelolco 1967) and the South Pacific Nuclear Free Zone Treaty (Rarotongo 1985) To these may be added the Agreement concluded between Argentina and Brazil on the Peaceful Use of Nuclear Materials (1991) as well as the Treaty establishing Euratom (Rome 25 March 1957) This latter also sets out provisions relating to safeguards but it is a much wider Treaty introducing special rules on nuclear material ownership and containing provisions relating to health protection etc

5 In this article we shall frequently use the following abbreviations NPT (Treaty on the Non Proliferation of Nuclear Weapons) NNWS (Non Nuclear Weapon States) and NWS (Nuclear Weapon States)

6 McKnight A *Atomic Safeguards A Study in International Verification* UNTAR New York 1971 Scheinman L *The International Atomic Energy Agency and World Nuclear Order* Resources for the Future 1987 Kooymans P H

respect, the first Resolution adopted by the General Assembly set up the *UN Atomic Energy Commission* (AEC) with the task of drafting proposals for the elimination of nuclear weapons, the exchange of scientific information and the control of the peaceful use of nuclear energy[7] It should be noted that the word *safeguards* is already present in this Resolution In the years following the second World War, nuclear technology was kept secret or passed on, little by little, to new allies The proposals for the future of the use of nuclear energy and above all for the spreading of technological and scientific know-how were made, therefore, by the United States on the one hand, and the Soviet Union on the other

In June 1946, the United States representative within the UN Atomic Energy Commission, Bernard Baruch, suggested that an *International Atomic Development Authority* be set up This, had it in fact been created, would have been in a very special position vis-à-vis the different phases of the production and use of nuclear energy[8] The Authority would have had the exclusive right to carry out research in the field of atomic explosions and to produce and possess fissile materials No other nuclear activity would have been allowed unless authorised by the Authority and all would have been controlled by it As from the setting up of the Authority, the United States would have destroyed all of its nuclear weapons and would have communicated all of its technological know-how to the Authority The proposal was, however, rejected by the Soviet Union, which tabled a suggestion (by Mr Gromyko) for the drafting of a Convention banning the production and use of nuclear weapons and providing that three months after the entry into force of the Convention, all nuclear weapons should be destroyed Only after this, would verification and control measures have been negotiated

Great efforts were made to reconcile views, which varied widely, as to the phases of the banning of nuclear weapons and inspection and control procedures The last meeting of the AEC took place in July 1949 This is when the Soviet Union carried out its first nuclear explosion and the nuclear arms race – as well as the Cold War – began The Cold War was at the origin of the "vertical" proliferation of nuclear weapons, and in particular the spectacular increase, in both quantitative and qualitative terms, of the destructive capacity of the nuclear arsenals of the United States and the Soviet Union This vertical proliferation ended only with the ending of the Cold War Meanwhile, the spread of nuclear weapons throughout the world – "horizontal proliferation" – was less rapid than had been feared in the 1950s and 1960s

In December 1953, by which time the USSR and the United Kingdom had joined the nuclear club, President Eisenhower of the United States gave his *Atoms for Peace* speech before the General Assembly of the United Nations On this occasion, he proposed the setting up of an "International Atomic Energy Agency" under the auspices of the United Nations, which would take charge of the international dissemination of nuclear technology for peaceful purposes At this time, there was wide consensus among the major powers about general policy, and this led in 1957 to the creation of the IAEA The basic idea of the *Atoms for Peace* speech given by Eisenhower was taken up in the Statute of the Agency, which refers to its dual function

Article II of the Statute emphasises the *promotional* role of the Agency

to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world

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'The Peaceful Application of Nuclear Power and the Non Proliferation System *Proliferation and the Safeguarding of the Peaceful Application of Nuclear Power* Koninklijk Instituut van Ingenieurs Kerntechniek The Hague Symposium 9 December 1976

7 P H Kooymans *op cit* p 7 L Scheinman *op cit* p 51

8 L Scheinman *op cit*

Article III 5 stresses the *supervisory* role of the Agency

> *to establish and administer safeguards designed to ensure that special fissionable and other materials, services equipment, facilities, and information made available by the Agency or at its request or under its supervision or control 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 the State s activities in the field of atomic energy*

Meanwhile, co-operation had developed at the European level, culminating in 1957 when the Treaty of Rome was signed by the Benelux countries, France, Germany and Italy This marked not only the establishment of the European Economic Community but also that of Euratom The Euratom Treaty provides for extensive technical and scientific co-operation and also aims to ensure that nuclear materials are not diverted from the uses for which their users declared they are intended Moreover Euratom is responsible for controlling agreements concluded with third States (e g the United States) or an international organisation (e g co-operation with IAEA concerning safeguards pursuant to the Non-Proliferation Treaty)

2.2 Spread of Nuclear Weapons Throughout the World

There has been an enormous spread or proliferation of nuclear weapons since the atom bomb was first developed The number of nuclear-weapon countries has increased and each of them has greatly increased its arsenal both in terms of quantity and quality

Since China became a member of the club of nuclear-weapon States in 1964 no other country has admitted to having such weapons[9] For the time being, therefore, there are still only five countries which officially possess nuclear weapons[10] China, France, the ex-USSR, the United States of America and the United Kingdom In addition to these five countries officially possessing nuclear weapons and recognised under the NPT[11], there are also three countries which are not signatories of the NPT but which could, since the early 1980s, be called "de facto nuclear-weapon States Israel India and Pakistan[12] Israel is generally thought to have developed nuclear weapons already As for India and Pakistan, they at least have the capability of deploying such weapons rapidly Given the secrecy surrounding the nuclear programmes in these countries, little is known about the number of weapons or the quantities of highly enriched uranium or plutonium in their possession A good deal of information has, however, been published in recent years[13]

Three countries have recently given up their nuclear military ambitions South Africa Argentina and Brazil South Africa acceded to the NPT in 1991 Moreover, President De Klerk announced in March 1993 that his country had produced six nuclear weapons in the 1980s but that they had since been completely dismantled Since 1991, all the nuclear material from these weapons has been made

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9 Spector L S *The Undeclared Bomb The Spread of Nuclear Weapons 1987 1988* Carnegie Endowment Book 1988 p 3

10 Officially means recognised by the NPT as a NWS see Article IX 3 of the NPT For the purposes of this Treaty a nuclear weapon State is one which has manufactured and exploded a nuclear weapon or other nuclear explosive device prior to 1 January 1967

11 It should be noted that the arsenals of the ex-Soviet Union and the United States included more than 95 per cent of the total number of nuclear weapons in the world (SIPRI *Yearbook* 1989)

12 See also Carchon R *La non-prolifération d'armes nucléaires et les contrôles internationaux* SCK CEN NN 360 1995 p 54

13 Albright D Berkhout F Walker W *World Inventory of Plutonium and Highly Enriched Uranium* 1992 SIPRI Oxford University Press

available for Agency inspections As regards Argentina and Brazil, they concluded an agreement on the exclusively peaceful use of nuclear energy on 18 July 1991[14] Inspections are carried out by a body set up under this bilateral agreement, namely the ABACC (Brazilian-Argentinean Agency for Nuclear Material Accounting and Control) An inspection agreement similar to that existing between Euratom and the IAEA has been concluded with the IAEA[15], under which the IAEA is allowed to undertake initial inspections, always in collaboration with the ABACC[16]

The policy of non-proliferation has, however, not been able to prevent either the quantitative or the qualitative development of nuclear weapons In 1990, there were some 50 000 nuclear warheads throughout the world[17] with a destructive force very much greater than that of the Hiroshima and Nagasaki bombs Over the years, much effort has been put into drafting binding international obligations dealing with a whole series of questions relating to the non-proliferation of nuclear weapons These will be discussed in the following section

3 TREATIES LIMITING THE DEPLOYMENT OF NUCLEAR WEAPONS[18]

Countless negotiations have been conducted since the second World War aimed at concluding international agreements about nuclear control and disarmament in general These negotiations have been conducted within the United Nations[19], or on a bilateral basis between the major military powers Treaties limiting the deployment of nuclear weapons deal with different aspects, such as the demilitarisation of the *res communis* (3 1), the non-proliferation of nuclear weapons (3 2), nuclear disarmament (3 3) and nuclear tests (3 4)

3 1 Demilitarisation of the Res Communis

It should first of all be said that these treaties today play an important role in the international law of the environment even though they were concluded at a time when the environmental impact of activities was given less consideration than is the case today These treaties aimed, first of all, to limit the arms race inasmuch as they restricted use of the *res communis* such as the Antarctic, outer space, the moon and the sea-bed Moreover these treaties go further than denuclearisation, i e beyond the setting up of a nuclear-weapon-free zone, since in banning the presence of all weapons of mass destruction, they in effect provide for the demilitarisation of the *res communis*

14 Agreement between the Republic of Argentina and the Federative Republic of Brazil on the Use of Nuclear Energy Solely for Peaceful Purposes IAEA INFCIRC/395 November 1991 The text is also summarised in the *Nuclear Law Bulletin* No 48 (December 1991) and No 49 (June 1992)

15 See *infra* Section 4 3

16 Argentina and Brazil are also Parties to the Treaty of Tlatelolco but so far only Argentina has acceded to the NPT

17 *Nuclear Weapons A Comprehensive Study* United Nations New York 1991 p 27

18 *Ibid* p 108 *et seq*

19 It is interesting to note that in the middle of the Cold War the General Assembly of the United Nations adopted a Resolution declaring that the use of nuclear weapons was illegal The West voted against this Resolution while the Communist, African and Asian countries voted in favour those of Latin America abstaining Under international law Western countries could claim that this Resolution does not apply to them since they have consistently repudiated the ideas stated in it (Akehurst M *A Modern Introduction to International Law* Unwin Hyman London Sixth Edition, 1987 p 273)

3 1 1 The Antarctic Treaty[20]

The purpose of the Antarctic Treaty, concluded on 1 December 1959 is to ensure that Antarctica is used exclusively for peaceful purposes, in particular, for international scientific research By prohibiting any measures of a military nature (Article I), the Treaty sets up a demilitarised zone which means *ipso facto* that nuclear weapons may not be introduced into the area concerned As of July 1994, forty-two countries – including the five nuclear-weapon States – were parties to the Antarctic Treaty[21], one of the first to organise on-site inspections

3 1 2 Treaty on Outer Space[22]

The purpose of the Treaty on Outer Space of 27 January 1967 is to ensure that outer space is used for the benefit of mankind (Article I) It provides that no country can have sovereign rights in respect of outer space and that all activities in outer space shall be conducted in accordance with the interests of peace and international security (Articles II and III) Thus, it is not allowed to send nuclear weapons or weapons of mass destruction into orbit around the earth The moon and other celestial bodies must be used exclusively for peaceful purposes (Article IV) In 1994 there were ninety-three States parties to this Treaty[23]

3 1 3 Sea-bed Treaty

This Treaty, dated 11 February 1971, provides that contracting parties may not place nuclear weapons or other weapons of mass destruction on or under the sea-bed A verification procedure, introducing close co-operation with the UN Security Council, is provided for in Article III Eighty-nine States have acceded to this Treaty[24]

3 1 4 Treaty on the Moon

The Treaty on the Moon of 18 December 1979 applies to the moon and celestial bodies other than the earth It states that the moon and its resources are the common heritage of mankind and must be used exclusively for peaceful purposes (Articles 1, 3 and 11) It is linked to the Treaty on Outer Space, and prohibits the militarisation of the moon and the other celestial bodies Only nine countries are parties to this Treaty[25]

3.2 The Non-Proliferation of Nuclear Weapons

The desire to prevent the proliferation of nuclear weapons is manifested in two ways firstly the wish to conclude an international agreement preventing the proliferation and acquisition of nuclear weapons[26], and secondly by the desire to create nuclear-weapon-free zones within which all nuclear weapons would be prohibited

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20 Sands Ph *Principles of International Environmental Law* Vol 1 Manchester University Press 1995 p 522

21 Situation as at 31 July 1994 *The United Nations and Nuclear Non-Proliferation*, New York 1995 p 23

22 Treaty on the Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and Other Celestial Bodies Sands Ph *op cit* p 281

23 *The United Nations and Nuclear Non-Proliferation*, New York 1995 p 23

24 *Ibid*

25 *Ibid*

26 The non proliferation of nuclear weapons is linked to measures to limit the proliferation of the means of delivering such weapons Note should be taken in this context of the creation in 1987 of the *Missile Technology Control*

3 2 1 Restricting the Acquisition of Nuclear Weapons the Treaty on the Non-Proliferation of Nuclear Weapons

The Treaty on the Non-proliferation of Nuclear Weapons[27] was opened for signature on 1 July 1968, and entered into force on 5 March 1970 As of March 1995, there were 178 States Parties to the Treaty[28], thus making the NPT the most broadly-based instrument of non-proliferation[29]

3 2 1 1 Main Obligations Under the NPT

The role of the NPT is to ensure that an "alarm bell" is rung in the event of the unlawful diversion of materials The Treaty is basically a "contract" between nuclear-weapon States (NWS) and non-nuclear-weapon States (NNWS), under which

- the NNWS undertake not to receive the transfer of any nuclear weapons, not to acquire them and not to manufacture them (Article II),

- the NWS undertake not to assist in any way whatsoever the NNWS to acquire or manufacture nuclear weapons (*horizontal* proliferation) (Article I),

- all Parties to the Treaty (both NWS and NNWS) undertake to facilitate and participate in the exchange of equipment, materials and scientific and technological information (Article IV 2),

- all Parties undertake to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and on general and complete disarmament (Article VI)

The Treaty contains a number of undertakings by nuclear-weapon States (NWS) and non-nuclear-weapon States (NNWS) The latter undertake not to manufacture or acquire nuclear weapons or other nuclear explosive devices (Article II) Each Signatory State undertakes to conclude an agreement with the IAEA, within eighteen months at most, after the beginning of negotiations This agreement regulates the application of the safeguards to all peaceful nuclear activities for the purpose of verification of the fulfilment of the State's obligations (Article III), something which has given rise to the concept of "full-scope safeguards"[30] The NPT recognises, in exchange, the right of all Parties to the fullest possible exchange of equipment, materials and scientific and technological information for the peaceful uses of nuclear energy (It may be noted in passing that most nuclear disarmament agreements provide for similar rights)

None of the restrictions imposed on NNWS applies to NWS which have, however, made a voluntary offer in respect of safeguards for their civilian nuclear industry The IAEA thus carries out controls in a limited number of installations[31] To this must be added the criticism made essentially by developing countries about the discriminatory nature of the Treaty[32] the NPT legalises the

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Regime See *The United Nations and Nuclear Non Proliferation* p 18 This does not however form part of the subject matter of this article

27 Herron L W Le point de vue d un juriste sur les garanties et la non-prolifération *Bulletin de l'AIEA* 1982 Vol 24 N°3 pp 32-38 Fischer G *La prolifération des armes nucléaires* Paris Pichon et Durand-Auzias 1969 Berlia, G *Probleme nucleaire et relations internationales* Les Cours de Droit, Paris 1972

28 Blix H The IAEA United Nations and the New Global Nuclear Agenda *IAEA Bulletin* No 3 1995 pp 3-7

29 A list of the NPT Signatory States is published in the *IAEA Bulletin*, No 1 1995

30 Priest J 'IAEA Safeguards and the NPT Examining Connections *IAEA Bulletin* No 1 1995

31 Article III of the Treaty instructs the IAEA to organise safeguards in respect of fissionable material

32 McKnight A *op cit* p 25

position of the NWS without, however, exerting real pressure on them as regards effective disarmament[33] Developing countries are also suspicious that the NPT is being used as an instrument to restrict the transfer of technology from North to South Over the years, there has nevertheless developed a consensus on the importance of the NPT for the world community, as witnessed by the quasi-universal accession to the Treaty

Article III 2 of the NPT defines only the concept of "fissionable material , not that of "equipment' The different countries which export nuclear materials therefore decided to clarify this point in an informal IAEA committee The work of this committee, called the *Zangger Committee* after its Chairman, led to the establishment of the so-called *Trigger List*[34] The different nuclear exporting countries also came together to set up the "London Club' , within which export policies have been harmonised A "Trigger List" has also been drawn up by this Club

The problem of proliferation does not, however, arise solely when fuel is being processed within a nuclear power plant, but also during the transport and storage of fissionable materials The main fear is that terrorist organisations get hold of materials which could be used to make a nuclear weapon, and sell them to the highest bidder In this context, the Convention on the Physical Protection of Nuclear Material was concluded in New York on 3 March 1980 It obliges signatory countries to adopt the necessary provisions in their national law to ensure that nuclear materials do not fall into the wrong hands[35] during both transport and processing Although these aspects are linked to non-proliferation they are not dealt with in the present article

3 2 1 2 Review Conferences – Duration – Extension Conference[36] [37]

The NPT, concluded for a limited duration of 25 years, made provision for review conferences at five-year intervals Under Article X, the Treaty was to remain in force until 1995 (25 years) between 17 April and 12 May 1995, the signatory States met in New York to discuss the future of the NPT

The States decided by mutual agreement to extend the NPT indefinitely[39] This decision is one of a number of decisions relating to extension, to the principles and objectives of non proliferation and disarmament, and to the examination procedure of the Treaty as well as a Resolution concerning the Middle East We shall not, in this article, analyse the results in detail and will deal with a few aspects only extension itself, a decision concerning nuclear-weapon-free-zones[40] and the desire to strengthen safeguards[41]

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33 Boyle A E Nuclear Energy and International Law An Environmental Perspective *British Year book of International Law* 1989 p 257

34 Courteix S Les accords de Londres entre les pays exportateurs d equipements et de matieres nucleaires *Annuaire Français de Drout International* 1976 p 34

35 Lamm V *The Utilisation of Nuclear Energy and International Law* Akademiai Kiado Budapest 1984 p 127 Pirotte O Girerd P *et al Trente ans d'experience Euratom La naissance d'une Europe nucleaire* Bruylant Bruxelles 1989 p 56 Carchon R *op cit*

36 Pellaud B 'The Treaty on the Non-Proliferation of Nuclear Weapons a Pillar for Nuclear Disarmament *Elements for Speeches* 22-23 May 1995

37 Rockwood L The Nuclear Non-Proliferation Treaty A Permanent Commitment to Disarmament and Non Proliferation *Nuclear Law Bulletin* No 56 December 1995 pp 9 18

38 It is important to note that it is only recently that the five NWS acceded to the NPT China and France agreed to do so in 1992 so that the five permanent members of the United Nations Security Council are now Parties to the NPT (Schemman L The Non Proliferation Treaty on the Road to 1995 *IAEA Bulletin* No 1 1992 p 33)

39 Rockwood L *op cit* p 9 NPT/CONF 1995/32

40 NPT/CONF 1995/32/DEC 2

41 NPT/CONF 1995/32/DEC 1

Extending the NPT was clearly made easier by the more relaxed international atmosphere and the, at times, spectacular progress made in nuclear disarmament in the United States and the ex-USSR since the lifting of the Iron Curtain[42] The indefinite extension may be considered as a victory for the major powers since any extension for a limited period would have provided the "small" countries with a means, on the occasion of each new extension conference, of pressuring the NWS genuinely to reduce their vast stocks of nuclear weapons However, the five-year review conferences will still be held, thus providing opportunities for the NNWS to exert pressure Moreover, the NWS

> *reaffirm their commitment as stated in Article VI to pursue in good faith negotiations on effective measures relating to nuclear disarmament*[43]

In parallel with the implementation by the NWS of Article VI of the NPT, the NNWS need binding legal provisions protecting them from the use or threatened use of nuclear weapons[44] Thus, several countries insisted on the drawing up of an international convention in which the NWS would guarantee, on the one hand, to assist NNWS should they suffer a nuclear threat ("positive security assurance") and, on the other hand, not to use nuclear weapons against them ("negative security assurance")[45] The present proposals for a Comprehensive Test Ban Treaty (CTBT)[46] contain provisions of this type

The Extension Conference also emphasised the importance of establishing nuclear-weapon-free zones (NWFZ), as provided for under the Rarotonga[47] and Tlatelolco[48] Treaties There is a desire to establish other NWFZ , in particular in sensitive regions such as the Middle East Further, it is hoped to turn nuclear-weapon-free zones into zones free of all weapons of mass destruction, something which would mean establishing demilitarised zones covering the sovereign territories of several States, and no longer simply *res communis*[49]

Lastly, mention should be made of the desire to strengthen the effectiveness of the IAEA safeguards and to give the Agency increased resources in order to detect nuclear activities which have not been notified We shall deal with the strengthening of the safeguards system in greater detail in section 6

3 2 1.3 Right of Withdrawal

Article X provides that each Party has to right to withdraw from the Treaty on three-months notice, if it considers that its supreme interests have been jeopardised North Korea used this provision at the end of March 1993 despite having announced, in a joint statement with the United States in June of the same year, that such withdrawal was suspended until further notice This withdrawal option naturally weakens the Treaty the technology acquired under the NPT for the

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42 Simpson S The Birth of a New Era? The 1995 NPT Conference and the Politics of Nuclear Disarmement *Security Dialogue* 1995 Vol 26 No 3 pp 247 256

43 NPT/CNF 1995/L 5 p 2

44 Already in 1968 the United Nations Security Council – two weeks before the signature of the NPT – adopted Resolution 255 which confirmed that any agression (or threat thereof) involving the use of nuclear weapons against a NNWS would mean direct action by the Security Council and above all by its five permanent members Furthermore the five NWS unilaterally gave assurances of negative security

45 On 11 April 1995 shortly before the Extension Conference the United Nations Security Council adopted Resolution 984 containing assurances of positive and negative security

46 See *infra* Section 3 4

47 See *infra* Section 3 2 2 2

48 See *infra* Section 3 2 2 1

49 See *supra* Section 3 1

peaceful use of nuclear energy can in this way be used for military purposes without the international community being able to do anything about it

3.2.2 The Establishment of Nuclear-Weapon-Free Zones

3.2.2.1 Treaty for the Prohibition of Nuclear Weapons in Latin America – Tlatelolco Treaty[50] [51]

The Tlatelolco Treaty of 14 February 1967 was the first regional agreement establishing a denuclearised zone on the South American continent[52] The Parties to the Treaty undertake not only to refrain from producing, testing, using or acquiring nuclear weapons themselves, but also to prohibit the receipt, storage, installation, deployment and any form of possession of any nuclear weapons directly or indirectly, by themselves, by anyone on their behalf or in any other way All nuclear weapons are therefore banned in South America The Parties also undertake to refrain from encouraging or authorising in any way the production, acquisition, etc of nuclear weapons

Two Protocols are attached to the Treaty, the first addressing countries outside Latin America and the second addressing the NWS in particular

In Additional Protocol I, the countries of the West have undertaken to apply the Treaty obligations within those territories in South America for which they are *de jure* or *de facto* responsible France, the Netherlands, the United States of America and the United Kingdom are the signatory countries to Additional Protocol I

Additional Protocol II provides that the five NWS undertake to respect the nuclear disarmament status of the continent and not to threaten to use nuclear weapons against any Contracting Party of the Treaty[53] The countries which have signed this Protocol are the People's Republic of China France the ex-USSR, the United States of America and the United Kingdom

Given that this is a regional agreement, it sets up its own verification system and therefore creates its own control bodies Article 7 provides for the setting up of OPANAL[54] whose most important task so far has been to consolidate the NWFZ The promotion of access to nuclear energy for exclusively peaceful purposes will, however, become just as important in the 21st century[55] To avoid unnecessary duplication and overlapping with IAEA controls, an agreement has been concluded

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50 Fischer G La cooperation internationale en matiere d utilisation pacifique de l energie atomique *Annuaire Français de Droit International* 1955 pp 228 257 Lamm V *op cit* p 109 Carchon R *op cit* p 19 Roman Morey E Latin America s Treaty of Tlatelolco instrument for peace and development *IAEA Bulletin* No 1 1995 pp 33-36

51 This was the first Treaty relating to the non-proliferation of nuclear weapons and was in a sense the precursor of the NPT signed one year later

52 The following States have ratified the Treaty Antigua and Barbuda Argentina Bahamas Barbados Bolivia Brazil Chile Colombia Costa Rica, Dominican Republic Ecuador El Salvador Granada Guatemala Haiti Honduras Jamaica Mexico Nicaragua Panama Paraguay Peru St Vincent and the Grenadines Surinam Trinidad and Tobago Uruguay Venezuela (Source Timerbaev R and Moskowitz L *Inventory of International Non Proliferation Organisations and Regimes* Program for Non-Proliferation Studies Monterey Institute of International Studies February 1994)

53 Under Article 2 of Additional Protocal II the NWS undertake not to contribute in any way to the performance of acts involving a violation of the obligations of Article 1 of the Treaty

54 *Organismo para la Proscripcion de las Armas Nucleares en la América Latina* (Agency for the Prohibition of Nuclear Weapons in Latin America)

55 Roman Morey E *op cit* p 35

between OPANAL and the IAEA[56] The controls exercised under the Treaty of Tlatelolco are similar to those provided for under the NPT

In addition, Article 16 of the Treaty provides for special inspections in the event of suspected non-compliance The OPANAL Council organises a special inspection if one of the Contracting Parties has good reason to suspect another Contracting Party of carrying out prohibited activities The General Conference of OPANAL takes notes of any breaches of the Treaty's provisions, and may pass this information on to the United Nations Security Council and the General Assembly as well as the Council of the Organisation of American States[57] The IAEA will also be informed of any offences permitting it to take action under its own Statute This control system does not provide for any special procedures or sanctions since reference is made to the sanctions applicable within the framework of the UN and the IAEA

3 2 2 2 South Pacific Nuclear Free Zone Treaty – Treaty of Rarotonga

The Treaty of Rarotonga was signed on 6 August 1985 and entered into force on 11 December 1986[58] It establishes a nuclear-free zone covering the larger part of the Pacific region south of the Equator Its signatories are prohibited from possessing, using, storing or testing nuclear weapons (even through the intermediary of a third party), as well as from dumping of nuclear waste at sea Parties are free to decide for themselves their national policy on the visits of nuclear-propelled ships or vessels carrying nuclear weapons

By analogy with the Tlatelolco Treaty, the signatories are endeavouring to establish Protocols with nuclear-weapon States aimed at making the South Pacific a nuclear-free zone Protocol I prohibits signatory States from producing, storing or testing nuclear weapons in the regions under their jurisdiction So far, only Russia and China have acceded to Protocol II (prohibition from using or threatening to use nuclear weapons against Parties to the Treaty) and Protocol III (prohibition from testing weapons in the South Pacific nuclear-free zone)

3 2 2.3 Proposals

At the NPT Extension Conference[59], several proposals were made aimed at establishing other nuclear-weapon-free zones, for example in Africa or the Middle East. Recently, the countries of the Association of South East Asian Nations (ASEAN)[60] have declared the zone under their jurisdiction to be one free from nuclear weapons[61]

3 3 Treaties on Disarmament

The international community recently proved its concern about the threat from nuclear weapons by giving the Nobel Peace Prize of 1995 to Joseph Rotblat and the Pugwash Conferences on Science and World Affairs for their endeavours to limit nuclear weapons in international politics, and one day eliminate them altogether

56 Fischer G La zone denuclearisee du pacifique Sud *Annuaire Français de Droit International* 1985, p 45

57 See Article 20 of the Tlatelolco Treaty

58 The Signatory States to the Treaty are Australia, Cook Islands Fiji Kiribati Nauru Niue New Zealand, Papua New Guinea Salomon Islands Western Samoa, Tuvalu (Source Timerbaev R , and Moskowitz, L *op cit*

59 See *supra* Section 3 2 1 2

60 This Organisation was established in 1967 to promote economic co-operation in the region Current members are Indonesia Malaysia, the Philippines Singapore Thailand Brunei Darassalam and Vietnam (Source ASEAN-online on *Internet*)

61 *Le Monde* 16 December 1995

There are several international treaties on controlling weapons and on disarmament They deal with weapons of mass destruction, nuclear, biological and chemical weapons, conventional weapons and ballistic missiles[62] In addressing these subjects, the NWS are carrying out their obligations under Article VI of the NPT

> *Each of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective methods relating to cessation of the nuclear arms race at an early date and to nuclear disarmament and on a treaty on general and complete disarmament under strict and effective international control*[63] [64]

The issues of proliferation and the arms race are obviously linked Thus the UN General Assembly adopted a Resolution in 1978 in which it was recognised that

> *failure of efforts to halt or reverse the arms race, in particular the nuclear arms race increases the danger of proliferation of nuclear weapons*[65]

Negotiations to limit the number of nuclear weapon heads have been conducted at the United Nations and the disarmament conference Important progress was, however made following bilateral negotiations between the United States and the ex-Soviet Union[66] Negotiations were carried on throughout the 1970s within the context of Strategic Arms Limitation Talks (SALT) and led to the adoption of two Treaties SALT I in 1972 and SALT II in 1979 Although these Treaties have not really reduced the number of nuclear weapon heads, they have limited new technological developments and were at the origin of a large number of definitions which helped subsequent negotiations These continued in the 1980s under the name of START (Strategic Arms Reduction Talks)[67]

On 7 December 1987, Presidents Reagan and Gorbachev signed the INF Treaty the preamble of which refers to their obligations under Article VI of the NPT This Treaty, which entered into force on 1 June 1988, is remarkable in that it provides for the destruction of a whole series of nuclear missiles and introduces a system of rigorous verification The INF Treaty has led to the destruction of more than 2 500 nuclear missiles

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62 See Lomas P "The INF Treaty and the Non Proliferation Treaty Lomas and Muller *Western Europe and the Future of the Non-Proliferation Treaty* Centre for European Policy Studies Brussels 1989 p 104

63 Although expressed in general terms ("Each of the Parties to the Treaty) this article applies essentially to the NWS

64 This is a statement of goodwill incumbent upon the NWS

65 Final Document of the Tenth Special Session of the General Assembly New York General Assembly Resolution S 10/2 10 June 1978 *The United Nations and Nuclear Non-Proliferation* The United Nations Blue Book Series Volume III New York 1995

66 *Nuclear Weapons A Comprehensive Study* United Nations New York 1991 pp 114 *et seq*

67 These negotiations are taking place in the context of the *Nuclear and Space Talks* (NST) divided into three different groups dealing with strategic nuclear weapons medium and intermediate range nuclear weapons and defense and outer space aspects

After the INF Treaty, the START I and START II Treaties were also signed[68] Although the collapse of the Soviet Union has complicated the implementation of START I[69], the two START Treaties provide for a 70 per cent reduction in the nuclear arsenals of the United States and the Russian Federation[70]

It should be noted, given that verification procedures are becoming increasingly important – for instance in the course of the negotiations of the Comprehensive Test Ban Treaty (CTBT) – that the above-mentioned Treaties provide for stringent inspection rights thus creating an atmosphere of mutual trust

3 4 Nuclear Test Treaties

The five NWS have carried out (or are carrying out) nuclear tests to develop their military nuclear arsenal Between 1945 and 1989, 1 819 tests took place[71] Particular attention has been paid recently to nuclear tests following the NPT extension conference and, a little later, the carrying out by France of six nuclear tests[72]

There has always been a link between the policy of non-proliferation and the negotiations relating to the CTBT on the one hand, and the cessation of the production of fissionable materials for military purposes on the other [73] The two were considered essential in order to limit the arms race and remove the discriminatory nature of the NPT Renewed attention was paid to this link shortly before the NPT extension conference

> *At a time when NPT Parties are contemplating the prospects for the nuclear non-proliferation regime in 1995 and thereafter – well into the twenty-first century – the future and durability of this regime will to a large degree, depend on what decisions on a CTBT and a cut-off agreement are made in the coming months before the NPT extension conference in 1995*[74]

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68 On 31 July 1991 and 3 January 1993 respectively While the Treaties are a significant gesture they do not at all imply a genuine renunciation of these weapons Darricau A Le TNP apres 25 ans ' *Nuclear Law as a Source of Confidence* Proceedings of the Conference of the International Nuclear Law Association Nuclear Inter Jura 1995 Helsinki 3 7 September 1995

69 These problems were resolved upon conclusion on 23 May 1992 of the Lisbon Protocol in which Belarus Kazakstan and the Ukraine acceded to the NTP as *non*-nuclear weapon States and in which these countries undertook to respect the provisions of START I The United States ratified START II in early January 1996

70 Each of the Parties has destroyed some 2000 missiles each year (*The United Nations and Nuclear Non-Proliferation*, The United Nations Blue Book Series Volume III New York 1995 p 29)

71 Some 1 819 nuclear tests were recorded of which the United States carried out 921 the Soviet Union 642 France 180 the United Kingdom 42 and China 34 (Source *Nuclear Weapons A Comprehensive Study* UN New York 1991, p 58)

72 France considered it needed to carry out a few more tests before being able to conduct simulated nuclear explosions François Mitterrand had imposed a moratorium suspending tests (as moreover did the United States the Russian Federation and the United Kingdom) but shortly after his election Jacques Chirac announced that tests would start again they have now been completed Even during the temporary French moratorium China continued to carry out nuclear tests

73 As witnessed by the very high number of UN General Assembly Resolutions on this subject and the agendas of NPT review conferences

74 Timerbaev R Strengthening the NPT Regime A CTBT and a Cut-off of Fissionable Material *Disarmament* 1993 Vol 16 No 2 p 98 Timerbaev R Are a Comprehensive Test Ban and the Cessation of Fissionable Materials for Weapons Now Possible? *New Realities Disarmament Peace Building and Global Security* UN Conference New York 20 23 April 1993 pp 197 199

The nuclear tests in the atmosphere in the 1950s gave rise to several Resolutions of the United Nations General Assembly to protect mankind and the environment against the dangers of ionizing radiation[75] These Resolutions led to the conclusion of the Partial Test Ban Treaty (PTBT) of 1963 and provided New Zealand and Australia with grounds on which to bring proceedings against France before the International Court of Justice in 1973 Following France's unilateral declaration not to carry out any more tests in the atmosphere, the Court held that there was no reason to continue with the case In 1995, New Zealand asked the Court to reconsider the matter but it refused to do so [76]

So far, it has only proved possible to conclude agreements of limited scope the Partial Test Ban Treaty (PTBT) of 1963 banning nuclear tests in the atmosphere, the Threshold Test Ban Treaty (TTBT) of 1974 banning nuclear tests involving more than 150 kt, and the Peaceful Nuclear Explosions Treaty (PNET) of 1976 imposing the same limit of 150 kt for peaceful explosions These last two Treaties, which entered into force on 11 December 1990, are bilateral agreements between the United States and the ex-Soviet Union The PTBT, on the other hand, has been signed by 123 States[77], France and China not being among them

The CTBT is still today a sensitive topic in international diplomacy the fact that the second and fourth NPT review conferences (in 1980 and 1990, respectively), did not succeed in reaching agreement on the final document, is in large measure due to the CTBT[78] Nevertheless important progress has been made in recent months The Chairman of the ad hoc group on the Nuclear Test Ban has said that signature of the CTBT can be envisaged in 1996[79] While the undertakings of the NWS at the NPT extension conference are not unconnected with this development, we feel that this progress is due above all to international détente which has in part reduced the importance of nuclear weapons in the military dissuasion strategies of the super powers and which means that the immense amount of money needed to manufacture and maintain vast quantities of such weapons can no longer be justified

The main proposals concerning the CTBT include the following[80]

- each Party undertakes to ban, and not to carry out nuclear weapons tests or any other nuclear test in the atmosphere or underground,

- in order to achieve the objective of the Treaty, to ensure compliance with its provisions and improve co-operation between Parties, the CTBT Organisation (including three bodies namely the Conference of the Parties, the Executive Council and the Technical Secretariat) will be set up,

- the Organisation may ask the IAEA to carry out the verification duties under the CTBT

75 Sands Ph *op cit* pp 244

76 Horbach N "The New French Nuclear Tests Dispute , *Nuclear Law Bulletin No.56* December 1995 pp 64 73

77 Situation as at 31 July 1994 (Source *The United Nations and Nuclear Non Proliferation* New York 1995 pp 24-25)

78 *Ibid*

79 Press Release United Nations "Conference on Disarmament Concludes 1995 session DC 95/42 22 September 1995

80 According to the texts available at the end of September 1995 Conference on Disarmament CD/1346 6 September 1995 and CD/1346/Add 1 of 19 September 1995 It should be noted that these proposals contain many passages still between square brackets and will quite possibly be subject to amendment

- provision is made for detailed verification procedures based on an international monitoring system[81] and on-site inspections,

- the Treaty is to enter into force at the earliest two years after its signature

- the duration of the Treaty is unlimited, and any State will be entitled to withdraw from it – after giving the appropriate notice – should exceptional circumstances arise endangering the supreme interests of that State,

- the NWS give positive and negative assurances to the NNWS, Parties to the CBTB the NWS will not use nuclear weapons or threaten to use them against the NNWS, each Party will assist any other Party subject to an attack by nuclear weapons, and

- the CTBT does not in any way limit the rights and obligations under the Antarctic Treaty, PTBT, the Outer Space Treaty, the Tlatelolco Treaty, the NPT, the Sea-Bed Treaty, the Treaty on the Moon or the Rarotonga Treaty

Negotiations are far from being completed and many areas of disagreement remain, for example the question of whether the CTBT should or should not contain a definition of civilian nuclear explosions, and about verification procedures[82] The CTBT will only be effective if it organises and introduces a detailed verification system which, moreover, is provided for by the International Monitoring System It first has to be decided which body should be responsible for verification The United States and France favour the setting up of a special new organisation entrusted with implementation of the CTBT[83] This organisation would have to maintain technical, logistical and administrative links with the IAEA It should be emphasised that such a system would necessarily require financial contributions from Member countries

There is a feeling in some quarters that the conclusion of the CTBT has lost a major part of its practical importance given technological developments[84] and the conclusion of the above-mentioned disarmament Treaties[85] We feel this is true only up to a certain point since the CTBT would make a large contribution to the universality of arrangements for non-proliferation and environmental protection The CTBT will take on its full importance – as mentioned in its draft preamble – when it has been universally adopted, i e when countries like India, Israel and Pakistan become members Four of the five NWS have said they are in favour of signing the CTBT, after cessation of the French nuclear tests, China has stated its intention to carry out a very few of its own[86]

Proposals concerning the CTBT are often linked to suggestions as to how to limit the production of fissionable materials for the manufacture of weapons and other nuclear explosive devices (cut-off agreement) On the initiative of President Clinton, the United Nations General Assembly in 1993

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81 Using amongst other things infrared satellites radionuclides seismological data etc

82 It appears difficult from the technical standpoint to design option zero (no nuclear explosions at all) since physicists are unable to say whether zero exists as far as energy is concerned *Le Monde* 31 January 1996 Des obstacles a Geneve avant l option «zero essai»

83 *Ibid*

84 By means of computer simulations it is in theory possible to gauge the effectiveness of a nuclear weapon without carrying out a nuclear test

85 Hoekema T CTBT and NPT An Essential Linkage? *The Future of the International Non Proliferation Regime* van Leeuwen M ed Kluwer Academic Publishers 1995 pp 232 233

86 After carrying out a series of six nuclear tests between September 1995 and January 1996 France declared itself in favour of the rapid conclusion of the CTBT (*Le Monde* 31 January 1996 Jacques Chirac se pose en chef de file d une politique de desarmement)

asked the disarmament Conference to prepare the ground for negotiations on a Convention banning the production of fissionable materials for the manufacture of nuclear weapons[87] The disarmament Conference has set up an ad hoc committee for this purpose and has asked it to negotiate a non-discriminatory, multilateral and internationally and effectively verifiable treaty[88][89] Different opinions have already been expressed as to the scope of this mandate Doubts have been raised as to whether the mandate allows examination only of future production or also of the past production of fissionable materials

Although negotiations on the cut-off and the CTBT are far from being completed they may yet be considered as important instruments helping to bring the arms race to an end[90] Inasmuch as the conclusion of such conventions reflects the implementation by the NWS of their obligations under Article VI of the NPT, this would mitigate the discriminatory nature of the NPT and help towards the universality of non-proliferation provisions

4 SYSTEMS OF SAFEGUARDS WITH REGARD TO FUEL[91]

In this section we shall examine how fuel is monitored, by which international bodies and in accordance with what procedures

As far as safeguards are concerned, it should be noted that the States of the European Union are at present subject to two systems the system of Euratom (created by the Treaty of Rome of 1957) and control by the IAEA as a result of accession to the NPT Since the entry into force of the NPT there has been close collaboration between the two systems, each of which will be studied in further detail, first separately and then as they interact

4 1 Authority of the IAEA Safeguards[92]

Two main safeguards systems have been developed within the IAEA First, the system under the IAEA Statute which dates from 1957 (and is contained in INFCIRC/66)[93], and secondly the system under the NPT which is set out in INFCIRC/153 There are other INFCIRC documents in existence as for example INFCIRC/193(96) detailing the co-operation between the IAEA and Euratom[94] but these are similar to the system under the NPT, and thus to INFCIRC/153[95]

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87 Hoekema T *op cit* p 237

88 Disarmament Conference CD/1364 26 September 1995 p 140

89 A first step towards a cut-off would be to make an inventory of plutonium and HEU stocks moreover an international body should collect and publish data on plutonium and HEU annually (See Albright D Berkhout F and Walker W World Inventory of Plutonium and Highly Enriched Uranium 1992 SIPRI Oxford University Press 1993 p 213)

90 Timerbaev R , Strengthening the NPT Regime " *op cit* p 97

91 Blix H Aspects juridiques des garanties de l Agence Internationale de l Énergie Atomique *Annuaire Français de Droit International* 1983 p 37 Rometsch R. International Safeguards on the Peaceful Uses of Nuclear Material *Nuclear Law Bulletin*, 1974 No 13 pp 66-72 Herron L W *op cit*

92 Ramaud J M *L Agence Internationale de l Energie Atomique* Colin Paris 1953 p 21 et seq Fischer G L Agence Internationale de l Énergie Atomique *Annuaire Français de Droit International* 1956 p 616 et seq Lamm V *op cit* p 44 *et seq*

93 INFCIRC/66/Rev 2 'The Agency s Safeguards System IAEA September 1968

94 See *infra* Section 4 3

95 INFCIRC/153 (Corrected) The Structure and Content of Agreements between the Agency and States Required in connection with the Treaty on the Non-Proliferation of Nuclear Weapons IAEA June 1972 This document is also called the *Blue Book* Goldblatt J *Twenty years of the NPT Implementation and Prospects* International Peace Research Institute Oslo 1991

The number of countries which have concluded safeguards agreements with the IAEA has increased considerably from 64 countries in 1975 to 118 in 1994 Of these latter, 102 countries have concluded a similar agreement in accordance with their obligations under the NPT[96] Furthermore, since the NPT (which entered into force in 1970) was concluded for a limited duration of 25 years, the conference examining the NPT was held in the month of April 1995 At this conference, the NPT Signatory States agreed to extend the Treaty for an unlimited period[97], and to organise review conferences every five years

As at end 1994, 170 power reactors, 158 research reactors and critical installations, 196 other installations and 334 sites outside installations were subject to safeguards[98] These figures are set to increase considerably, *inter alia*, because of the accession of nearly all the new States of the ex-USSR The quantity of nuclear material monitored will thus become greater and greater

4 1 1 Under INFCIRC/66

The powers of the IAEA as regards the system of safeguards were laid down in its Statute at the time of its creation Article III 5 of the Statute of the IAEA[99] provides that the Agency is authorised

> *to establish and administer safeguards designed to ensure that special fissionable and other materials services equipment, facilities, and information made available by the Agency or at its request or under its supervision or control 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 arrangements, or at the request of a State, to any of that State's activities in the field of atomic energy*

States accept controls by way of different types of agreement

- "project agreements" relating to the supply of specific materials and equipment made available by the IAEA,
- "transfer agreements" under which States cede their control functions to the IAEA, as defined in collaboration agreements,
- "unilateral submission' by a State to IAEA controls over certain establishments, nuclear materials or other nuclear activities

Safeguards procedures are set out in document INFCIRC/66, which constitutes the basis for project agreements, transfer agreements and unilateral submissions, and deals with equipment, installations, fissionable materials and all other materials and information These controls relate to individual installations in agreement with the State concerned This constitutes the most important difference with regard to the system based on the NPT, in which controls relate to all of the Signatory State's fuel and all its activities

96 Blix H *Statement to the Review and Extension Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons* New York 17 April 1995 IAEA C22 (hereinafter referred to as the *Statement Extension Conference*)

97 See *supra* Section 3 2 1 2

98 Blix H *Statement Extension Conference*

99 *IAEA Statute* June 1980

4 1 2 Under the NPT – INFCIRC/153

The NPT obliges each non-nuclear-weapon State Party to the Treaty to conclude an agreement with the IAEA to apply safeguards in respect of its peaceful nuclear activities The sole purpose of these safeguards, as specified in Article III 1 of the NPT, is to verify that the State in question does not divert

nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices

The NPT does not prohibit States Parties from using nuclear energy for non-explosive military applications (such as the nuclear propulsion of ships or submarines) So far, however no NNWS has sought to do so

The arrangements concerning this safeguards system are set out in document INFCIRC/153 This document serves as the basis for all agreements concluded with non-nuclear-weapon States which have signed the NPT, under which all the fissionable materials and all the peaceful nuclear activities of such States are made subject to controls

The fundamental undertaking of a State in the framework of the NPT safeguards agreement is

to accept safeguards in accordance with the terms of the Agreement on all source or special fissionable materials in all peaceful nuclear activities within its territory under its jurisdiction or carried out under its control anywhere for the exclusive purpose of verifying that such material is not diverted to nuclear weapons or other nuclear explosive devices[100]

Given that the IAEA is not a Party to the NPT, the importance of such agreements is obvious all the Member States' and the Agency's rights and obligations are defined in the safeguards agreements[101] The NPT may be considered as the cornerstone of a world-wide safeguards system since it expressly confers on the Agency authority to carry out controls over *all* a State's fuel and *all* its peaceful nuclear activities

4 1 3 Comparing INFCIRC/66 and INFCIRC/153

We shall now examine in greater detail the specific obligations under these two documents

INFCIRC/153 defines the objective of fuel control and obliges the IAEA to formulate a technical conclusion relating to "Material Unaccounted For" (MUF) in all accounting units (called Material Balance Areas") on the basis of verification of activities

INFCIRC/66 does not require the drawing up of similar conclusions but does oblige the IAEA – under its Statute – to report on the implementation of the agreement and, in the event of non-compliance, to inform the Board of Governors accordingly INFCIRC/66 gives the IAEA a number of resources intended to allow it to draw conclusions similar to those set out in INFCIRC/153 concerning fissionable products For each particular situation, the IAEA must itself assess whether application of its procedure for verifying fissionable materials permits its to carry out its control responsibilities

100 IAEA INFCIRC/153 *op cit* para 1

101 Rometsch R International Safeguards on the Peaceful Uses of Nuclear Material *Nuclear Law Bulletin* No 13 1974 p 70

The technical objectives of fuel control are defined in the agreements as follows

the timely detection of diversion of significant quantities of nuclear material from peaceful nuclear activities to the manufacture of nuclear weapons or of other nuclear explosive devices or for purposes unknown and deterrence of such diversion by the risk of early detection [102]

The concepts of "early detection" and "significant quantities" have been defined over the years and are based essentially on inspection practice in the field A "significant quantity" corresponds approximately to the quantity of fuel which would make it possible to manufacture a nuclear weapon, having regard to all conversion processes It is also used in the selection of accounting values "Significant quantities" should not be confused with "critical masses"

The system described above is thus that which regulates the control of safeguards, and is applicable world-wide Control over fuel has developed in a particular way in the European Union because of the quasi-simultaneous development of two parallel control systems that of Euratom and that of IAEA The Euratom system is described in the following section

4 2 Euratom Safeguards Authority [103]

It is the Treaty of Rome, and more particularly the Euratom Treaty, which designates the authority responsible for Euratom controls The Euratom Treaty is one of the three Treaties concluded by the six States at the origin of the European Community (the other Treaties being those of coal and steel, on the one hand, and of the European Community, on the other hand) The Euratom Treaty contains a chapter on nuclear safeguards, the first Article of which[104] provides that

In accordance with the provisions of this Chapter, the Commission shall satisfy itself that, in the territories of Member States

a ores, source materials and special fissile materials are not diverted from their intended uses as declared by the users,

b the provisions relating to supply and any particular safeguarding obligations assumed by the Community under an agreement concluded with a third State or an international organisation are complied with

It should first of all be noted that the French version of the Euratom Treaty uses a different expression for safeguards Article 77 speaks of "contôle de sécurité" instead of "garanties" (while the English term used in both cases is "safeguards") The French wording in the Euratom Treaty is somewhat confusing[105] since the expression "contôle de sécurité" is used rather in relation to the protection of radioactive materials against terrorist or criminal activities [106]

There are two parts to this Article 77 that materials should not be diverted from their intended uses as declared by the users, and that the obligations assumed by the Community under an agreement concluded with a third State or an international organisation should be complied with So, the

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102 INFCIRC/153 para. 28

103 Errera, J Symon E. *et al Euratom Analyse et commentaire du traité* Librairie Encyclopedique, Bruxelles 1958, Fischer, G , Euratom , *Annuaire Français de Droit International* 1956, pp. 695 710 Pirotte, O *op cit*

104 Article 77 of the Treaty establishing the European Atomic Energy Community Rome 25 March 1957

105 Vanden Borre T L usage pacifique de l énergie nucleaire memoire, Universite catholique de Louvain 1993 What is more the English text speaks of ' safeguards

106 See the introduction It would seem however that this distinction does not give rise to important legal differences

Euratom safeguards system does not deal solely with the diversion of nuclear materials for the possible manufacture of a nuclear weapon (the goal shared with the IAEA safeguards in the NPT) but also with many other aspects relating to the actual use of such materials, usually defined in the supply contracts in which the Community guarantees that specific commitments will be complied with

Article 77 of the Treaty provides that the Head of Euratom Inspectorate (Euratom DCS Luxembourg) must carry out controls in the different installations in the European Union containing fuel, to satisfy itself that

ores source materials and special fissile materials are not diverted from their intended uses as declared by the users

The other Articles in this Chapter specify how these goals are to be achieved

- operators must declare to the Commission the basic technical characteristics of their installations and must make regular reports on nuclear material stocks and movements

- the Commission sends inspectors, who have access to all places in which nuclear materials are stored, to the different installations,

- the Commission may pronounce sanctions against operators who, in particular do not fulfil their obligations, and may, for example, place an installation under the supervision of an inspector

Under Article 82, the Commission may, in the event of non-compliance with the provisions regulating safeguards, issue a directive to the Member State concerned It calls upon the State to take all measures necessary to bring such infringements to an end, and fixes a time limit in which the necessary measures must be taken[107] The meaning of the concept Member State is important It relates not only to the State itself, but the author of the infringement may also be a person or enterprise on the territory of that State

In fact, the Commission negotiates directly with operators and not with the governments of Member States The Euratom system is, consequently, supranational in nature with certain sovereign rights of States being transferred to the European Commission The latter does not, however have police powers, only a limited power in the field of physical protection

After the conclusion in 1973 of the safeguards agreement with the IAEA it became necessary for the Commission to update its regulations on safeguards to meet the new requirements The new Regulation[108] related to the nuclear materials and installations of the nine Member States including the two nuclear-weapon States, with the objective of enabling the Commission to obtain from operators the information necessary both for itself and for the IAEA This Regulation has been in

107 If the Member State concerned does not take appropriate action within the set time limit the Commission or any interested Member State can appeal directly to the Court of Justice of the European Community The prior opinion of the Commission is not required so as to reduce procedural delays

108 European Commission Regulation (Euratom) No 3227/76 of 19 October 1976 concerning the application of the provisions on Euratom safeguards *Official Journal of the European Communities* No L363 31 December 1976

force since January 1977 The arrangements for this synergy are set out in document INFCRC/193[109], the main thrust of which is similar to the document referred to above (INFCRC/153)

4 3 IAEA-Euratom Synergy

After the signature of the NPT by the NNWS of Euratom, the Community Member States found themselves faced with two different legal regimes The problem was to integrate the Euratom safeguards into the system of safeguards administered by the IAEA[110]

The different European Community (now the European Union) non-nuclear-weapon States signed the NPT at the same time They thus concluded a joint agreement with Euratom and the IAEA, ensuring compliance with the NPT obligations under this agreement The agreement between the seven non-nuclear-weapon States, the European Community and the IAEA[111], signed in April 1973, entered into force in February 1977 after ratification by the Member States concerned and the adoption by the Commission of the legal instruments required for its application In structure and provisions, it follows the INFCIRC/153 model closely, but also takes account of the existence of the Euratom safeguards system by way of the Protocol and certain special provisions In 1976, a similar agreement was concluded between the IAEA, the European Community and the United Kingdom (which unlike France, is subject to Euratom safeguards), in pursuance of the voluntary proposal made by the United Kingdom to subject its civilian nuclear installations to IAEA safeguards

France acceded to the NPT in 1992 It had already concluded an agreement with the European Union and the IAEA providing for safeguards similar to those of the other agreements but limited to the materials which France wanted the IAEA to control Article 14 of the Protocol of this document provides that the IAEA will carry out its inspections at the same time as the Euratom inspections, observing the activities of the European Union inspectors As far as the plutonium present in Belgium is concerned (Belgonucléaire and the CEN-SCK plutonium laboratories), the inspection arrangements have evolved over time to a joint team inspection This arrangement is again the subject of discussion because, in particular, of the cost-effectiveness considerations imposed upon the IAEA[112]

Euratom Regulation 3227/76 sets out the arrangements for inspection in this sphere[113] Apart from the arrangements currently being discussed, non-nuclear-weapon States of the European Union will remain subject to a dual inspection by the two international bodies, in accordance with a joint or separate procedure

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109 INFCIRC/193 The text of the Agreement between Belgium Denmark the Federal Republic of Germany Ireland Italy Luxemburg the Netherlands the European Atomic Energy Community and the Agency in connection with the Treaty on the Non Proliferation of Nuclear Weapons IAEA September 1973

110 As Gijssels says The NPT raised in an acute manner the problem of reconciling the same legal subject undertakings in different legal systems (Gijssels J L accord entre Euratom et l AIEA en application du Traité de non prolifération des armes nucleaires *Annuaire Français de Droit International* 1972 pp 837 863

111 IAEA INFCIRC/193

112 In 1992 an additional agreement was concluded between Euratom and the IAEA It tallies with the *New Partnership Approach* its purpose being to improve the application of the safeguards in the Member States of the European Union (Thorstensen S and Chitumbo K Safeguards in the European Union the New Partnership Approach *IAEA Bulletin* No 1 1995 pp 25 28)

113 European Commission Regulation (Euratom) No 3227/76 *op cit*

5. PROBLEM COUNTRIES [114]

Various States Parties to the NPT are suspected of wishing to acquire nuclear weapons and of taking measures for the purpose of manufacturing plutonium or highly enriched uranium, placing themselves outside the international control of fuels Iraq, North Korea and Iran head the list of suspect nations

5 1 Iraq[115]

Iraq ratified the NPT on 29 October 1969 A safeguards agreement between the IAEA and Iraq entered into force at the end of February 1972, and the IAEA has therefore been carrying out inspections ever since Israel, however, had doubts about the effectiveness of the IAEA safeguards The peaceful nature of the Iraqi nuclear programme was called into question well before the Gulf War even though no anomaly had been revealed by the IAEA inspections

After the Gulf War, the UN Security Council adopted Resolution 687 on 3 April 1991 giving the IAEA important rights of inspection of Iraq's known or presumed nuclear sites The Agency was also empowered to destroy or take away any material or equipment necessary to manufacture nuclear weapons Between May 1991 and May 1994, there were 24 inspections in Iraq For the first time, the Agency had access to satellite photos and confidential information supplied by national secret services As a result of Iraq's transparency obligations combined with the verification by better-informed inspectors from the Agency, a large clandestine nuclear programme was discovered

5.2 North Korea[116]

North Korea acceded to the NPT in 1985, at a time when its nuclear programme was assuming considerable importance However, North Korea waited until February 1992 before concluding a safeguards agreement with the Agency, despite the fact that Article III of the NPT expressly provides that conclusion of such an agreement should take place within 18 months of accession

Following political discussions between North and South Korea, the two countries issued a Joint Declaration on the Denuclearisation of the Korean Peninsula. The inspection carried out by the Agency in the Autumn of 1992 of the initial inventory of nuclear materials revealed contradictions between the declaration, on the one hand, and the amounts found by the Agency on the other Contrary to what had been claimed, not one but several reprocessing programmes had been carried out in the Nyongbyon reprocessing plant. This gave rise to the suspicion that the quantity of plutonium produced was higher than that declared by North Korea.

Since consultations with North Korea did not produce any satisfactory result on 9 February 1993 the Agency made a formal request, within the context of Article 73(b) of the safeguards agreement, to carry out a special inspection[117] The repeated calls for co-operation made by the

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114 For greater detail see Carchon R *op cit* p 54 *et seq* van Leeuwen M Nuclear Proliferation in the Middle East *The Future of the International Nuclear Non-Proliferation Regime* van Leeuwen M ed Martinus Nijhoff Publishers Dordrecht 1995 pp 125-153

115 Thorne L. IAEA nuclear inspections in Iraq *IAEA Bulletin*, No 1 1992 pp 16-24 Donohue D L and Zeisler R Behind the scenes scientific analysis of samples from nuclear inspections in Iraq *IAEA Bulletin* No 1 1992 p 25 Fischer G Le bombardement par Israel d un reacteur nucleaire irakien *Annuaire Français de Droit International* 1981 p 147

116 Mack A Nuclear End Game on the Korean Peninsula in *The Future of the International Nuclear Non Proliferation Regime op cit* pp 15-56

117 More especially of the two Nyongbyon complex sites

Agency fell on deaf ears given that in the case in point, Pyongyang considered the United States to be its sole interlocutor On 12 March 1993, North Korea notified its withdrawal from the NPT This withdrawal was "suspended" after the Washington agreement starting bilateral discussions with North Korea, discussions which did not, however, lead to the acceptance by North Korea of full safeguards inspections

Representatives of the United States and North Korean governments met in Geneva from 23 September to 21 October 1994, with a view to finding an overall solution to the nuclear issue in the Korean peninsula North Korea agreed to stop building graphite-moderated reactors, and a group of countries[118] agreed, in return, to cover the cost (estimated at four billion dollars) of constructing light water reactors[119]

The fact that, because of the bilateral nature of the negotiations, the IAEA was sidelined, is regrettable The United States had been given no mandate by the Board of Governors of the IAEA What is more, the agreement between the United States and North Korea was not submitted to the IAEA for prior approval, which means that its legal validity could be called into question Under the agreement, North Korea is to receive $4 billion together with diplomatic recognition, and that solely in exchange for carrying out the obligations it had already undertaken before its agreement with the United States[120] It seems to us that sidelining the Agency in this way and making the fulfilment of NPT obligations subject to political negotiations constitute a dangerous precedent for the system of non-proliferation in the years to come Other countries may well now follow North Korea's example, hoping to win significant concessions while guaranteeing only to fulfil their obligations under the NPT

5 3 Iran

Iran is suspected of wanting to manufacture nuclear weapons, and the West has imposed a virtual embargo on it as regards nuclear equipment and technology Germany and France have refused collaboration on various occasions Unlike the situation in North Korea, there is no proof of secret nuclear installations in Iran Media reports of a uranium enrichment plant and other installations remain in the domain of speculation

Iran is a Party to the NPT and, as such, is subject to IAEA controls over all its activities involving fuel It can also ask for "special inspections", for example to establish a climate of trust In February 1992, IAEA inspectors visited six installations which they themselves chose, in order to throw light on the situation They reported that the on-site activities were altogether in line with peaceful uses Iran possesses a 5 MWth research reactor of United States manufacture, as well as the hot cells necessary to separate plutonium from spent fuel in gram quantities It is feared that this reactor could be used to produce small quantities of plutonium, even though it is subject to IAEA control This could lead to the same problem recently encountered in Iraq

It is difficult to estimate from what time Iran will be able to manufacture its own fuel since very little is known about its nuclear programme We do know that Iran is buying intensely abroad Little

118 In particular South Korea and Japan paying for 60 and 20 per cent, respectively of the costs

119 From a technical standpoint it is more difficult to produce plutonium in such a reactor; in addition it is much easier to detect any such production Light-water reactors therefore involve less risk of proliferation

120 Mack A Nuclear End-game on the Korean Peninsula *op cit* pp 33 and 38

or nothing is known about a possible military programme, but if there is any intention to acquire weapons, this could become apparent before the end of the century[121]

6. LESSONS TO BE LEARNED FROM PROBLEM CASES. STRENGTHENING THE SAFEGUARDS

Since the Gulf War and the subsequent inspections carried out by the IAEA, particular attention has been paid to clandestine activities[122]

In this connection, the IAEA has been accused of not having reported on the illegal activities being carried on in Iraq This was not really justified since the technical objective of the IAEA is rapidly to detect any diversion[123], in other words, it must ensure that declared materials have not ended up at a wrong destination, in Iraq, the problem was one of non-declared activities and materials The Board of Governors has never given the Agency a proper mandate to detect clandestine activity

The importance of the agreement which each State must conclude with the IAEA should be noted in this context These agreements do not in any way grant an unlimited right of access to the State s installations Moreover, the safeguards system cannot guarantee certainty "safeguards are a system for detection and for raising the alarm, rather than one of prevention or reaction [124] It is not for the Agency to take punitive measures against a State in breach of its obligations (whether under the NPT or by virtue of the safeguards based on the IAEA Statute), its sole function is to uncover irregularities and notify them to the United Nations It is for the Security Council to take the measures required to put a stop to the infringement detected by the Agency

Because of bad experiences in the past, the detection of illegal activities in States subject to IAEA inspection has been receiving particular attention Discussions are currently being conducted within the IAEA on the subject of "strengthening" the measures relating to safeguards[125] These include, amongst others, the use of special inspections and the obligation to notify, at an early stage the planning of new activities and constructions

It seems to us that the keys to strengthening safeguards are on the one hand to allow the IAEA greater certainty as to the declarations of States as regards safeguards[126] and consequently, as to the absence of non-declared nuclear activities, and on the other hand to give greater access to information and to sites[127] (for example, access to strategic locations even if these are not listed in the safeguards

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121 Albright D Berkhout F and Walker W *World Inventory of Plutonium and Highly Enriched Uranium* 1992 SIPRI Oxford University Press 1993

122 Euratom does not take any special measures to detect illegal activity but may on the basis of Article 77 of the Treaty of Rome exercise control over the European Union s imports and exports and over the use of fuel This implies also control over illegal activities

123 INFCIRC/153 *op cit* para. 28 see *supra* Section 4 1 3

124 Fischer G Le bombardement par Israël d un reacteur nucleaire irakien *Annuaire Français de Droit International* 1981 p 156

125 Pellaud B and Hooper R IAEA Safeguards in the 1990s Building From Experience *IAEA Bulletin* No 1 1995 pp 14 20 Pellaud B 'The Treaty on the Non Proliferation of Nuclear Weapons A Pillar for Nuclear Disarmament *Elements for Speeches* 22-23 May 1995 p 18 Blix H *Statement Extension Conference op cit* Jennekens J Parsick R von Baeckman A Strengthening the Internationl Safeguards System *IAEA Bulletin* Vol 34 No 1 1992 pp 6-10

126 A more detailed declaration is the subject of Programme 93+2 which began in 1993 and led to specific proposals accepted by the Board of Governors of the IAEA in March 1995

127 Under the IAEA statute there is also a right of access to additional information or sites Although never defined this right would seem to include the use of espionage services with the help *inter alia* of satellites

agreement with the State in question)[128] Proposals have been submitted to the Board of Governors of the IAEA

Additional provisions which could provide further information to the IAEA include references to information from outside sources such as press reports, import-export data and data supplied by other States, as well as visits to places outside the declared installation but within the territory of the State concerned, and application of different environmental control techniques Were the IAEA's duties to be extended to include verification under the CTBT, all these provisions could together help ensure the universality of non-proliferation measures

The purpose of the proposals made is to achieve greater transparency by giving greater freedom to inspectors Naturally, all these measures require greater co-operation from the States in question, in particular as regards an increased right of access for Agency inspectors

This should not be difficult to accept if safeguards are seen by States not as an imposition but as an opportunity to demonstrate non-proliferation bona-fides[129]

7. CONCLUSIONS

It is hardly surprising that the bombing of Hiroshima and Nagasaki prompted the international community to worry about nuclear weapons The first Resolution of the UN General Assembly created the UN Atomic Energy Commission It was, however, a good ten years before the UN Member States could agree on the creation of an international body introducing controls of nuclear materials and ensuring the right of countries to use nuclear energy for peaceful purposes The negotiations leading up to the drafting of the IAEA Statute were no doubt difficult, as witnessed by the failure of the Baruch Plan It was when the two superpowers each had nuclear weapons that they became allies in the fight to stop the proliferation of these weapons to other countries

Twelve years after the first (and so far the last) two atomic bombs were dropped, the IAEA Statute was adopted The essential role of the IAEA was to promote atomic energy and extend its contribution to peace, health and prosperity throughout the world At the same time, in 1957, six European States agreed in Rome on the creation of the European Economic Community and the European Atomic Energy Community (Euratom), providing for technical and scientific collaboration and introducing a system of safeguards

It was 1968 before the most advanced Treaty in the field of nuclear disarmament was signed the Treaty on the Non-proliferation of Nuclear Weapons to which, 25 years[130] after its entry into force, 178 States have acceded Thanks to the NPT, the real or assumed number of nuclear-weapon-States has remained limited As far as horizontal proliferation is concerned, it can be said that the NPT has acted, and can still act in the years to come, as a brake on the military nuclear ambitions of those countries still not in possession of nuclear weapons

Nevertheless six countries are posing, or have posed, a problem of horizontal proliferation Three of these countries (South Africa, Argentina and Brazil) have given up their military nuclear ambitions The three others (Israel, India and Pakistan) still refuse to accede to the NPT They are considered as countries in *de facto* possession of nuclear arms Significant progress in the non-

128 *Ibid* Note 116

129 Blix H *Statement Extension Conference* p 10

130 Blix H The IAEA United Nations and the New Global Nuclear Agenda *IAEA Bulletin* No 3 1995 pp 3 7

proliferation of nuclear weapons would, therefore, be achieved if these three countries acceded to the NPT

In the past, some dissident countries have given rise to problems, revealing shortcomings in the system of safeguards It would, however, be unfair to call the whole system of safeguards into question just because of problems in a few countries For most NPT Contracting Parties, safeguards have proved their worth

The international community seems to have learned lessons from past experiences and has taken steps to strengthen the system The most important aspect constitutes better access to information It remains to be seen whether the recent reinforcement measures will dissuade potential dissidents from taking the military nuclear path. Even if, thanks to the endeavours of the IAEA, the nuclear (material) potential of some dissidents has been neutralised, the scientific and technical know-how has nevertheless been acquired.

As far as vertical proliferation is concerned - the undertaking of the NWS under Article VI of the NPT – important progress has been made, in large part thanks to the international *detente* between the superpowers The nuclear arsenals of the United States and the ex-USSR have been considerably reduced by virtue of the nuclear armaments agreements they have concluded (INF and START I and II) The quasi exponential increase in the nuclear arsenals of the NWS during the Cold War has been slowed down, for economic as well as political reasons However, very little heed has been paid to the NPT's call for total disarmament Thus, as things stand today, the United States and the Russian Federation possess more than twice the long-range nuclear weapons that existed in 1970 i e at the time when the NPT entered into force[131]

The NPT was concluded for a limited period of 25 years, and the extension conference was therefore organised from April to May 1995 to decide on the Treaty's future Under pressure from the major powers, agreement was reached to extend the NPT for an indefinite period This extension of such a universal Treaty is certainly a very important element in the fight to prevent the future proliferation of nuclear weapons During the 25 years of its existence, the NPT has allowed commercial nuclear transactions to take place[132], both by means of commercial agreements based on guarantees from the control bodies, and by preventing the transfer of nuclear materials and equipment to countries with ambitions to possess nuclear weapons or which were considered as dissident

The International Atomic Energy Agency (IAEA) is the body to which the NPT gave the task of carrying out on-site inspections This mandate, which consists of carrying out controls over *all* fuel used in *all* the peaceful nuclear activities of a State is the basic element in the safeguards system It should, however, be emphasised that this system is only a technical arrangement for verifying the use of nuclear energy It would be materially and financially impossible and unrealistic to attempt to design a system with a 100 per cent guarantee of successful detection Nevertheless, we firmly believe in the credibility and reliability of the system provided that the IAEA is given the powers necessary to carry out its duties and that countries co-operate with it

Moreover an effective verification system is rather expensive Even if the political will to strengthen the safeguards system exists, this has above all to be translated into practical terms by

131 The number of nuclear weapons will not have fallen to 1970 levels until the year 2003 *Washington Post* 1 March 1995

132 See also Krämer J R NPT and AFC Building Blocks for Confidence and Predictability in Nuclear Trade Nuclear Inter Jura 1995 Helsinki

allocating sufficient funds to the IAEA Otherwise, the Agency's work will be hampered by financial constraints

Apart from the IAEA system, different regional agreements provide for their own inspection bodies This is the case for Euratom which has special sanctions available to it[133]

We feel that such regional safeguards agreements working in close collaboration with the IAEA present a great advantage the countries Parties to a regional agreement will more easily accept the powers of the regional body responsible for control Naturally, regional agreements can in no way impinge on the powers of the IAEA which is bound to guarantee the world-wide application of the safeguards system based on the NPT In this respect, Article VII of the NPT stipulates that any group of States is always entitled to conclude regional Treaties in order to assure the total absence of nuclear weapons in their respective territories

As stated above, the agreement between the IAEA and the State on whose territory the installations subject to safeguards are located, is extremely important The effectiveness of the safeguards system thus depends largely on the goodwill of States to comply with these agreements It should, however, be noted that IAEA inspections may be interpreted in two ways a State may consider them as an interference in its internal affairs, or it may consider them as an opportunity to show the *bona fide* fulfilment of its obligations under the NPT, thus opening the way for numerous peaceful applications of the atom

At present, there are two particular aspects to the discussion on total nuclear disarmament, namely signature of the Comprehensive Test Ban Treaty (CTBT), and the "cut-off" Convention, which prohibit the production of fissionable materials used for military purposes The objective of the Disarmament Conference is to conclude the CTBT before end-1996[134], reflecting a political signal being given by the NWS to the NNWS Given that it will signify implementation of Article VI of the NPT concerning nuclear disarmament, the CTBT will reinforce the policy of non-proliferation in the wider sense of the term

Total nuclear disarmament remains essentially a political choice Armament – whether with nuclear or conventional weapons – has always served to dissuade enemies Indeed, the Romans used to declare *Sivic pacem, para bellum*[135] There is no denying that during the Cold War, nuclear dissuasion was important Our planet has been saved from a third World War The question is whether dissuasion is still relevant following the collapse of the Soviet Union[136] Should we not guard against a terrorist State one day getting its hands on nuclear weapons? What methods could the major powers use – no longer having nuclear weapons – against dissident countries attempting to acquire the atomic bomb? Does a nuclear holocaust not seem more likely if the super-powers give up their dissuasive nuclear force? We cannot know One thing that is certain is that everything must be done to ensure that our civilisation experiences only two atomic bombs

133 The European Commission may bring a case directly against a nuclear operator before the Court of Justice in Luxembourg the purpose of the IAEA s safeguards system is to point out difficulties to its members and to the United Nations (in particular the Security Council)

134 See *supra* Section 3 4

135 If you want peace you must prepare for war

136 See the article by Charles Millon France s Minister of Defence in *Le Monde* 5 août 1995 'L ideologie de la paix contre la cause de la paix *A contrario* Goldblat J How Secure are States Without Nuclear Weapons? ' *Security Dialogue* Vol 26 No 3 1995, pp 257-263

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Consent Rights in the New Agreement for Co-operation in the Peaceful Uses of Nuclear Energy Between the United States of America and the European Atomic Energy Community

by R. Lennartz*

INTRODUCTION

After the adoption, in 1978, of the Nuclear Non-Proliferation Act (hereinafter referred to as the NNPA) by the American Congress, the United States administration approached the Commission of the European Communities with a request to re-negotiate the existing peaceful nuclear co-operation Agreement, concluded in 1960 This Agreement was to expire only on 31 December 1995 However, under the NNPA, the President of the US is required to initiate a programme for the re-negotiation of nuclear co-operation agreements already in effect on the date of enactment of the NNPA, with a view to obtaining the insertion of the provisions of the NNPA in such existing agreements [Section 404 (a)]

As a consequence, exploratory talks took place in order to determine the scope of any possible amendments to the 1960 co-operation Agreement The new and extended NNPA requirements for consent rights on certain nuclear fuel cycle activities in the European Atomic Energy Community (hereinafter referred to as Euratom) were one of the main issues discussed during these talks

With the approach of the expiration date of the 1960 Agreement, the Council of Ministers, upon proposal by the Commission, adopted a negotiating mandate pursuant to Article 101 of the Euratom Treaty on 16 December 1991, and formal negotiations for a new peaceful nuclear co-operation agreement started in the spring of 1992 (The Agreement was signed on 29 March 1996 and entered into force on 12 April 1996)

The US negotiators adopted the position of insisting on the insertion of the consent rights contained in the NNPA in the new Agreement, whereas the Commission was of the opinion that the non-proliferation credentials of the Member States of Euratom and of Euratom itself were of such an excellent nature that bilateral US controls, additional to the international non-proliferation regime, were not justified Euratom and its Member States regarded the consent rights as a possible means of influencing the nuclear fuel cycle choices made by them[1] Indeed, the non-proliferation credentials of Euratom and its Member States have risen to unique standards during more than thirty years of co-operation in the nuclear field with the US The insistence on bilateral controls over and above existing international non-proliferation commitments was regarded in the Community as not being

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1 See Jonathan B Schwartz, Controlling Nuclear Proliferation. Legal Strategies of the United States *Law and Policy in International Business* International Law Journal of Georgetown University Law Centre Vol.20 1988 p 39· 'Consent rights therefore provide the United States with the opportunity to affect a recipient s fuel cycle decisions as US supplied items are considered for additional uses

appropriate between two transatlantic partners of equal standing (Extracts of the new Agreement and the Agreed Minutes are reproduced in the "Texts" Chapter of this issue of the Bulletin)

These opposing views resulted in a stalemate in the negotiations which the Commission tried to solve by a high-level political demarche to the United States On 2 March 1994, the European Commissioner responsible for Energy, Mr Matutes, wrote a letter to the US Secretary of State Mr Christopher, in which he asked for more flexibility in the US position on consent rights In his reply, Mr Christopher declined to ask the US Congress for a waiver of the consent rights (as suggested by Mr Matutes), but promised to exercise the maximum flexibility within the constraints of legal requirements and of domestic sentiment For its part, the Council of Ministers reviewed the issue and, while wholly confirming the Commission's 1991 negotiating mandate, invited the Commission to explore all possibilities with a view to finding a solution to the problem

These demarches cleared the way to discuss the so-called programmatic long-term consents which the US administration had offered to Euratom Originally, consents were given case-by-case thus introducing great uncertainty into programmes requiring huge long-term investments However under Section 131 of the Atomic Energy Act, the US government can exercise consent rights in advance of proposed activities In this way, co-operating partner countries were given the confidence that US controls would be exercised in a stable and predictable manner [2]

THE CONSENT RIGHTS

The US consent rights include

1 a right over the enrichment of uranium to higher concentrations of the fissionable isotope U-235 [Section 123 a (7) of the Atomic Energy Act as amended by the NNPA]

2 a right over the transfer of US nuclear items to other countries (retransfers) [Section 123 a.(5)],

3 a right over the reprocessing and the physical or chemical alteration of specified nuclear material [Section 123 a (7)], and

4 a right over the storage conditions for sensitive nuclear materials [Section 123 a (8) of the Atomic Energy Act]

Implementation of these consent rights would require a complex system of tracking of the nuclear materials subject to these rights The Commission, during the negotiations argued that this would impose an excessive administrative burden on the operators and the Commission s nuclear safeguards system, which might discourage nuclear co-operation with the United States[3]

Let us now see what solutions the negotiators found for the different consent rights in order to meet both the US request for including consent rights in the agreement and the need for stability and predictability in their exercise

2 *Ibid.* page 43

3 This fear was already expressed by J Schwartz in his article mentioned in footnote (1) pages 40 and 41

1 Enrichment

Article 8 1 (A) of the new Agreement stipulates that enrichment up to twenty percent in the U-235 isotope, either transferred pursuant to the Agreement or used in or produced through the use of[4] equipment so transferred, can be carried out pursuant to the Agreement, within the territorial jurisdiction of either Party Apart from the normal non-proliferation conditions, such as the application of safeguards, physical protection measures and the peaceful use commitment, the Agreement does not require any further consent conditions before this activity can be carried out The introduction to the Article "The nuclear fuel cycle activities carried out pursuant to this Agreement include " should be seen as a further amplification of Article 1 1 D of the Agreement which states that supply between the Parties of nuclear material, non-nuclear material and equipment and provision of nuclear fuel cycle services are areas in which the Parties may co-operate Euratom therefore considers that this activity can be undertaken freely and unhindered by any specific consent requirement As for this provision being interpreted as a prior consent, it is a consent that could not be withdrawn because paragraph 8 of the Agreed Minute to the Agreement, referred to later on, does not apply to Article 8 1

As to enrichment of uranium to more than twenty percent in the isotope 235, the Agreement requires a case-by-case consent This consent will be requested by a Party for a specific case The other Party will either grant the consent or call for consultations, which have to be held within 40 days from the request Conditions attached to the consent will be agreed upon in writing There is of course no obligation for a Party to grant the consent This mechanism has been accepted by Euratom in other international nuclear co-operation agreements such as the ones with Australia and Canada It fits into the US policy of discouraging the use of highly enriched uranium

In this context, it can be noted that the Agreement does not forbid the supply of highly enriched uranium ("HEU") by the US Article 1 1 D, quoted above, is broad enough to also include HEU, whereas under Articles 3 and 4 the fullest possible exchange of materials and nuclear trade between the Parties should be facilitated However, under present US policy concerning HEU, based upon domestic legislation[5], it will be very unlikely that a licence for export of HEU will be granted As large quantities of HEU not obligated to the US are available, notably from Russia, this situation should in practice not result in large problems of supply for European operators Furthermore, the US has recognised in a side letter to the Agreement that specific research reactors in the Community may, under certain circumstances, need to use HEU as fuel In order to meet such needs, the US will use its best endeavours to come to an agreement with the Community on the conditions to be applied to a request from the Community for re-enrichment of HEU

2 Retransfers

In Article 8 1 (C) of the Agreement and in paragraphs 2, 3 and 4 of the Agreed Minute, which is an integral part of the Agreement, a mechanism is laid down under which the Parties grant each other prior generic consent for the retransfer of nuclear items covered by the Agreement.

Article 8 1 (C) distinguishes three categories of retransfers of nuclear items to third countries according to their nature and the purpose of their retransfer

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4 The words used in or produced through the use of" stem from the NNPA and have as a consequence that the obligations under US law are extended to non US material which is processed in a US nuclear reactor through US equipment or which has come into contact with US non nuclear material (e g moderator material) They also entail that plutonium produced through the burning of fuel obligated to the US will remain obligated to the US This is the so-called contamination effect of US legislation

5 US Energy Policy Act 1992

(i) retransfers of low enriched uranium ("LEU"), non-nuclear material, equipment and source material, for nuclear fuel cycle activities other than the production of highly enriched uranium,

(ii) retransfers of irradiated nuclear material for storage or disposal not involving reprocessing and

(iii) retransfers of other nuclear material and other special fissionable material for other fuel cycle activities including reprocessing, alteration in form or content and storage This category covers retransfers of plutonium, HEU and U-233

All the above retransfers have to take place in accordance with the procedures set out in the Agreed Minute

Paragraph 2 of the Agreed Minute provides that upon entry into force of the Agreement lists of third countries to which retransfers pursuant to Article 8 1 (C)(i) may be made, shall be exchanged by the Parties Each Party will provide a list of third countries to which the other Party may retransfer items as described under (i) above The lists will not be published with the Agreement but will be provided to the other Party for operational purposes from the day of entry into force of the Agreement

For third countries to be eligible for continued inclusion on such lists they must have made effective non-proliferation commitments This means, according to this paragraph of the Agreed Minute, by being party to and in full respect of their obligations under the Non-Proliferation Treaty or the Tlatelolco Treaty, by being in compliance with the Nuclear Suppliers Guidelines as laid down in IAEA document INFCIRC/254/Rev 1/Part 1, and, in the case of retransfer of items obligated to the US from the territory of the Community to a third country, such a third country must be Party to a nuclear co-operation agreement with the US The criterion of compliance with the NSG guidelines does not mean that it would be enough that the third country in question be a member of the NSG it entails having in force a legal structure to enforce the guidelines and the capability to maintain the necessary controls All of these criteria apply as a minimum and allow the Parties to exclude transfers to countries of possible non-proliferation concern or for other reasons

Additions of countries to the list can be done at each Party s discretion since it is in the other Party's interest that the list of countries of the originating Party be as long as possible Deletions however are subject to prior consultations (see paragraph 4 of the Agreed Minute)

Two situations can be distinguished

1 Retransfers of US Obligated Material From the EU

Under the 1960 Additional Agreement for co-operation between the United States and Euratom[6] "no such material will be transferred to unauthorised persons or beyond the control of the

6 As a matter of fact there are several nuclear co-operation agreements between Euratom and the USA. 1) On 27 August 1958 an Agreement entered into force which only states the principle that the Parties will co-operate in the peaceful applications of atomic energy (*Official Journal of the European Communities* No 17 19 March 1959) This is an Agreement of indefinite duration and constitutes the basis for later co-operation Agreements 2) Thus an Agreement for co-operation between the Government of the United States of America and the European Atomic Energy Community (Euratom) concerning peaceful uses of atomic energy was signed on 8 November 1958 (*Official Journal* No 17 as above) This Agreement expired on 31 December 1985 3) On 11 June 1960 an Additional Agreement for co-operation between the United States of America and the European Atomic Energy Community (Euratom) concerning peaceful uses of nuclear energy was signed (*Official Journal* No 31 29 April 1961) This is the Agreement which has been the basis of nuclear co-operation during the last 30 years It

Community, except as the Government of the United States of America may agree to such transfer and then only if the transfer of the material is within the scope of an Agreement for Co-operation between the Government of the United States of America and another nation or group of nations " (Article XI of the 1960 Agreement) Thus, even if the recipient countries have an agreement for co-operation with the US the regime for retransfers under the old Agreement was one of case by case consent The regime agreed to in the new Agreement is therefore a significant step forward since a prior generic consent is given so that retransfers to third countries satisfying the agreed criteria are allowed, subject only to a notification

The criterion that third countries to which the EU wishes to retransfer US obligated material, must have a nuclear co-operation agreement in place with the US is an explicit requirement under US law Therefore, third countries receiving US obligated material from Europe are required to hold that material under its co-operation agreement with the US The Parties will co-operate to obtain confirmation from third countries, on a generic basis, that they will hold any retransferred US obligated items under their agreements with the US The appropriate authorities in the EU remain, of course, free to issue export licences only in cases where retransfers fulfil their own export criteria set out in the Agreed Minute

Should a third country on the US list not qualify for the EU criteria, then the appropriate authorities in the EU are free not to grant an export licence Therefore, whenever retransferring US obligated material, the EU policy can be applied within the framework of the US list of third countries

2 *Retransfers of EU Obligated Material From the US*

In drawing up its list, the EU would only apply the objective criteria of its own export policy Thus, the EU list may be longer than the US list since, as stated before, it does not have to apply the criterion of the existence of a co-operation agreement between it and the third country in question However, the US under its present policy can be expected to regard retransfers of European obligated items from US territory as transfers originating from the US and therefore these retransfers would have to satisfy US legislation Thus, the Euratom list of countries would in effect only be operative in so far as it coincides with the US list of eligible countries, just as much as the US list is only operative in so far as the countries contained in it satisfy EU criteria

The Parties can, of course, always grant consent for retransfers to countries not on the lists following a case by case consideration

Retransfers of the materials and items mentioned in Article 8 1 (C) (ii) and (iii) are not foreseen at this moment, but should the need arise, the Parties shall exchange lists for that purpose In order to decide which countries will appear on such lists, the following additional criteria will be taken into account

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expired on 31 December 1995 4) The Agreement of 8 November 1958 was amended on 21 and 22 May 1962 (*Official Journal* No 72 of 8 8 1962) This amendment expired with the Agreement of 8 November 1958 on 31 December 1985 5) At the same date an amendment to the Additional Agreement was signed which expired on 31 December 1995 (*Official Journal* No 72 of 8 August 1962) 6) In 1963 another amendment to the Additional Agreement entered into force, expiring on 31 December 1995 (*Official Journal* No 163 of 21 October 1964) 7) A third amendment of the Additional Agreement was signed on 20 September 1972 which expired with the Agreement itself on 31 December 1995 (*Official Journal* No L 139 of 22 May 1974)

- consistency of the proposed retransfer with physical protection criteria contained in INFCIRC/225/Rev 3 and INFCIRC/274/Rev 1[7],

- the nature and content of the peaceful nuclear programmes of the third country in question

- the potential proliferation and security implications of the retransfer for either Party or a Member State of the Community

Retransfers of nuclear items to two countries have been mentioned specifically in the Agreement

As the reprocessing of US obligated material coming from Japan is a very important commercial activity for industry both in Japan and Euratom, the US has given prior consent to Euratom for retransfer of reprocessed material from Europe to Japan, by an exchange of notes with the European Commission dated 18 July 1988 The status of this consent has been reinforced under the new Agreement

- it is confirmed that it applies, *inter alia*, to plutonium contained in mixed-oxide fuel (Mox)

- the exchange of notes will remain in force as long as the new Agreement remains in force rather than being linked to the US/Japan Agreement which expires in 2018 whereas the Euratom/US Agreement will expire in 2026, subject to automatic renewal for additional periods of 5 years each unless a Party terminates the Agreement (Article 14 2)

- the consents granted in the exchange of notes can only be suspended for the same serious reasons and following the same procedures as those for which the new Euratom/US Agreement can be suspended (see paragraph 8 of the Agreed Minute)

Thus, the new Agreement has greatly increased the stability and predictability of trade in US obligated material between Europe and Japan

The second country is Switzerland, with which the US is currently negotiating a new peaceful nuclear co-operation agreement to replace the existing one due to expire this year

The US Government has given a political commitment to offer a long-term prior consent to Switzerland in the new Agreement for the transfer of irradiated nuclear material subject to that Agreement, into Euratom for reprocessing and for storage of the recovered plutonium and its fabrication into mixed oxide fuel elements Furthermore, once the new Agreement with Switzerland is in place, the US is prepared to give a long-term prior consent to Euratom to the retransfers of Swiss-owned plutonium including plutonium contained in Mox fuel elements from Europe to Switzerland

Other activities which can take place freely and unconditionally under the new Euratom/US Agreement are post-irradiation examination involving chemical dissolution or separation of irradiated nuclear material either transferred under the Agreement or used in or produced through the use of

7 INFCIRC/225 contains recommendations on the physical protection of nuclear material INFCIRC/274 is the Convention on the Physical Protection of Nuclear Material which entered into force on 8 February 1987 and constitutes an important framework for international co-operation in the physical protection of nuclear material while in international transport Following a review conference of the Convention in 1992, INFCIRC/225 was also revised and revision No 3 was published by the IAEA in September 1993

non-nuclear material or nuclear material or equipment so transferred, as well as the conditioning, storage and final disposal of such irradiated materials

3 Reprocessing and Alteration

Under Section 123 a (7) of the NNPA, reprocessing of nuclear material and "otherwise" alteration in form or content of plutonium, U-233 and HEU should be subject to a US consent right However, Section 131 a (3) of the Act indicates that such consent can be granted in advance The Parties have thus found a compromise by agreeing to a prior consent mechanism which fulfils the US legal requirements and which gives Euratom the predictability and certainty its industry needs

But first the Parties had to clarify what the term "alteration in form or content" means

The NNPA does not provide a definition and the US Government has tried to argue that this term is a kind of catch-all clause encompassing any processing of nuclear materials which is not reprocessing or enrichment.

The European Commission thought, however, that this term should be read in the light of the purpose of the NNPA and considered that only activities which increase the strategic, and therefore the proliferation value of the material[8] would be covered In the Agreement, alteration in form or content is now defined as meaning conversion of plutonium, HEU or U-233, it does not include post irradiation examination involving chemical dissolution or separation, disassembly or reassembly of fuel assemblies, irradiation, reprocessing or enrichment

Reprocessing and alteration may take place pursuant to the Agreement within the territorial jurisdiction of the Parties in facilities forming part of the delineated peaceful nuclear programmes described in annex A to the Agreement (Article 8 2) Pursuant to Article 18 of the Agreement, annexes form an integral part of it and annex A consists simply of a list of installations for reprocessing and one for alteration, the latter containing mainly fuel fabrication plants including mox fuel facilities

An initial list of facilities has been established by each Party In the course of the life of the Agreement, changes may, of course prove necessary These can be done through the procedures laid down in paragraph 7 of the Agreed Minute to the Agreement When the need materialises to add a facility to the list, a file will be prepared by the Party wishing to add the facility to its programme which will contain basic identification of the facility, its location and its capacity, declarations confirming the coverage of the facility by, in the case of a Euratom facility, Euratom safeguards and IAEA safeguards, non-confidential information on the IAEA safeguards approach and on Euratom safeguards, as well as a confirmation that physical protection measures are applied Upon receipt of that file, the other Party is to acknowledge receipt has been within thirty days The acknowledgement is limited to a statement that notification of the addition of a facility is received and it, or its absence, therefore cannot operate in law to eliminate either Party's rights to make changes unilaterally to its delineated peaceful nuclear programme

Deletions of facilities from the programmes may be done unilaterally by simple notification Any changes to the programmes can be discussed during the regular consultations, provided for under Article 12 of the Agreement

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8 This view seems to find some support in the article of Schwartz mentioned in footnote (1) On page 39 of the article he describes alteration in form or content as alteration of specified nuclear material which may provide readier access to sensitive materials

4 Suspension

The prior programmatic consent mechanism described above could be suspended by either Party if certain requirements described in paragraph 8 of the Agreed Minute are met

Such suspension could only take place in the event of certain objectively and clearly defined circumstances of extreme gravity from a non-proliferation point of view Though their occurrence is extremely unlikely, the procedures prescribed for the application of paragraph 8 are particularly sophisticated and restrictive, in order to exclude totally any arbitrary use of the right to suspend

Application of paragraph 8 would only be possible

- if there is objective evidence that the continuation of reprocessing or alteration in form or content would entail a serious threat to the security of either Party or a significant increase in the risk of nuclear proliferation, and

- if such threat or risk results from a situation of the same degree of seriousness as those listed in paragraph 8, these being,

  i an EU non-nuclear weapon State detonates a nuclear explosive device

  ii a nuclear weapon State uses an item, subject to the Agreement, in the detonation of a nuclear weapon,

  iii a Party or a Member State of the Community terminates or violates the NPT a safeguards agreement or physical protection guidelines as laid down in INFCIRC/254

  iv a Member State of the Community or the US retransfers an item subject to the Agreement to a non-nuclear weapon State that does not have a full-scope safeguards agreement with the IAEA,

  v a Member State or the US is subject to IAEA sanctions,

  vi acts of war, serious internal disturbances or serious international threats of war which threaten the safeguarding or physical protection of the activities involved

This wording has been carefully negotiated since, if only in theory it is not inconceivable that the threat or the risk might result from other, at present unforeseeable, situations But in any event such situations would only be relevant if they are *of the same or greater degree of seriousness*

Even if a Party would consider that one of the above mentioned situations or another situation of the same degree of seriousness would exist and that sufficiently objective evidence exists that, in such a situation, the continuation of reprocessing or alteration threatens its security or would significantly increase the risk of proliferation, certain procedural requirements have to be fulfilled

- that Party would have to consult the other Party before taking a decision, such consultation to take place at the highest level of government, namely at cabinet level for the US and at the level of the Commission for Euratom,

- if an appropriate solution is not found through consultation, any decision to suspend the programmatic consent shall only be taken at the highest political level, i e , by the President of the US or by the Council of the European Union

If, in spite of the above procedural guarantees, a Party decides to suspend the programmatic consent, that decision would be subject to several conditions

- the decision shall not be taken on the basis of actions of third countries or events beyond the territorial jurisdiction of the other Party unless the reprocessing or alteration activities would, due to such actions or events, result in a significant increase in the risk of nuclear proliferation or in a serious threat to the security of the other Party,

- the decision shall not be taken on the basis of differences over the nature of the Parties' nuclear programmes or fuel cycle choices, meaning, in concrete terms, that the US could not suspend consent over reprocessing because it is simply opposed to reprocessing as a matter of principle and does not carry it out domestically due to its policy choices,

- the decision shall only be taken in the most extreme circumstances of exceptional concern from a non-proliferation or security point of view, this clause conditioning the situation in which the decision can be taken so that if a Member State of the Community, for e g , would be subject to sanctions by the Board of Governors of the IAEA, the consent could only be suspended for that reason if the action for which the sanctions have been imposed causes *exceptional* concern from the non-proliferation point of view,

- the decision will be applied for the minimum period of time necessary to deal in a manner acceptable to the Parties with the situation which has prompted the suspension, implying that the Parties should co-operate to find a solution to the problem after the suspension decision has been taken and that the decision will be withdrawn as soon as a solution has been found,

- the Party which has suspended the consent shall keep the situation under constant review the situation and shall withdraw the suspension as soon as warranted, thus, the duration of the suspension will be minimised and will have to be withdrawn as soon as the other Party has remedied the situation which has given rise to the suspension

A very important feature of the suspension decision is that the suspension would not apply to an installation where one of the above circumstances or situations occurs but to the reprocessing or alteration activities of the other Party taken as a whole, i e , to the whole of the reprocessing or Mox fuel fabrication industry of Euratom Thus, the impact of a suspension decision for the other Party's industry will be enormous and this will constitute a powerful deterrent to invoke the suspension

Thus, even if the final decision to suspend will always reside with one Party, the above analysis shows that the programmatic consent would be very difficult to revoke

However, even on the assumption that conditions would occur warranting the taking of the decision to suspend, this would not entail, in practice, significant adverse consequences for European industry, on account of the so-called "reversion" mechanism as laid down in paragraph 13 of the Agreed Minute, which is no doubt one of the major achievements of the negotiations for Euratom

At the end of 1995 when the Euratom/US Agreement from 1960 expired, an inventory of all US labelled materials present in the EU was drawn up It includes very large quantities of material Assuming that at a given moment in time, US programmatic consent for reprocessing or alteration is suspended in respect of nuclear material supplied under the new Agreement, the EU would under paragraph 13 of the Agreed Minute, still have the right to carry on reprocessing or alteration of an amount of US-obligated nuclear material equal to the final inventory of material subject to the old Agreement This mechanism would therefore allow the EU industry, while acting in compliance with the new Agreement, to have recourse to those large reserves of nuclear material to continue its activities without any practical or legal hindrance

As a further guarantee against arbitrary suspension of the consent it was agreed that if a Party suspends its consent for reasons other than those set out in paragraph 8 (A) of the Agreed Minute including situations which are not of the same or greater degree of seriousness as those set out in paragraph 8 (A) under (a) or (b), the other Party shall have the right either to cease further co-operation under the Agreement or to suspend or terminate, in whole or in part, the Agreement itself (see last sentence of Article 13, first paragraph)

5 Storage

To meet the NNPA requirements on storage of sensitive nuclear material and yet to minimise interference in each others activities, the Parties have agreed upon the system laid down in Article 8 3 of the Agreement

Pursuant to this provision, each Party will establish a list of storage facilities in which plutonium U-233 and HEU subject to the Agreement, can be stored The list will be confidential if the Party so wishes It is, of course, made available to the other Party, which shall respect the confidentiality of the list, if the first Party has decided that the list should be confidential The Euratom list is classified as confidential Either Party may make changes to its list by simply notifying the other Party of the change and by receiving a written acknowledgement Such acknowledgement shall be given no later than 30 days after the receipt of the notification and shall be limited to a statement that the notification has been received

This language has been copied from the mechanism to change the peaceful nuclear programme as laid down in paragraph 7 of the Agreed Minute (see above) The required acknowledgement cannot be used in law to prevent the addition or deletion of a facility from the storage list by withholding the acknowledgement

The only requirement to which the Agreement submits the storage facilities is that they shall at all times, be subject as a minimum to the levels of physical protection set out in Annex C to the Guidelines for Nuclear Transfers (INFCIRC/254/REV1/Part1)

If the other Party has reason to believe that these levels of physical protection are not being fully complied with at a given facility, immediate consultations can be held Following such consultations each Party shall ensure that necessary corrective measures will be taken in order to remedy the situation identified during the consultations The aim of the measures is of course, to restore the levels of physical protection referred to above If such restoration proves not to be feasible, the nuclear material in question shall be transferred to a facility, which is included in the list and where physical protection levels meet the above requirements

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9 As compared to the total amount of nuclear material present in the EU US obligated material subject to the 1960 Agreement as at 31 December 1995 represents approximately the following ratio plutonium 30% HEU 86% LEU 27 % and nat U 3%

As the implementation of physical protection is – to a very large extent[10] – a Member State competence within the European Union, the Member State responsible for the storage facility where the possible problem has arisen, will be involved in the consultations on this subject

Thus, the US has shown reasonable flexibility on the implementation of the consent right on storage, as required by the NNPA The only point of reference for the acceptability of a storage facility is the maintenance of certain physical protection levels These levels are respected by Member States anyway, as part of their already existing international commitments, notably under the Physical Protection Convention and the Nuclear Suppliers' Group Guidelines, and should therefore not pose any difficulties Non-respect of these levels by a given facility will constitute an infringement of national legislation implementing those international commitments in the national legal order of the State in question

Furthermore, the paragraph in the Agreed Minute on suspension of consent rights is not applicable to Article 8 3 This shows clearly that a lighter and rational regime applies to storage of sensitive nuclear material supplied by one Party to the other

If a Party has reason to believe that physical protection levels are not maintained at the adequate level, what it can do is to call for consultations It cannot prevent the facility in question being added to the list or to require it to be removed from the list The decision to take the corrective measures mentioned above will remain the authority of the Commission, the Member State in question or the US authorities

TERMINATION OF THE AGREEMENT

In the context of the suspension or withdrawal of the prior consent, it may be interesting to refer to Article 13 1 of the Agreement which deals with suspension or termination of the whole Agreement

This provision allows for the cessation of co-operation under the Agreement or the termination or suspension, in whole or in part, of the Agreement itself in case of a material violation[11] of a Party's obligations under the Agreement Legally speaking however, this does not mean that the Party which makes use of this right therewith terminates or suspends a consent given to the other Party under the Agreement The suspension of the prior consent may leave the Agreement intact, whereas the right under Article 13 1 terminates or suspends the whole Agreement Even if the Agreement – namely Article 8, in which the consents are given – should be suspended in part, this would constitute a suspension for reasons other than those set out in paragraph 8(A) of the Agreed Minute and would give the other Party the right to terminate the whole Agreement

Therefore, the contentions made by the US Arms Control and Disarmament Agency in its Proliferation Assessment Statement for the Agreement that the United States have a prior consent over the activities mentioned in Article 8 1 A, B, D and E because they are activities "carried out pursuant to this Agreement", and because the Agreement can be terminated or suspended under Article 13, seems to be a somewhat dubious description of the situation

10 An exception would be the Community s Joint Research Centre facilities

11 The term material breach is defined in the Vienna Convention on the Law of Treaties as follows A material breach of a treaty for the purposes of this article consists in (a) a repudiation of the treaty not sanctioned by the present Convention, or (b) the violation of a provision essential to the accomplishment of the object or purpose of the treaty (Article 60 3 of the Convention) This definition is declared applicable to the Euratom/US Agreement in paragraph 17 of the Agreed Minute to the Agreement

CASE LAW AND ADMINISTRATIVE DECISIONS

CASES

France

*Judgments of the Chambre d'Accusation of the Court of Appeal of Caen Concerning the La Manche Storage Centre**

The ANDRA storage centre at La Manche was often in the headlines in late 1995 and early 1996 for two reasons a public enquiry relating to its entering a monitoring phase, and legal proceedings which gave rise to two judgments by the *Chambre d' accusation* of the Caen Court of Appeal

The public inquiry, forming part of a well-known administrative licensing procedure, does not call for any particular comment

The decisions of the *Chambre d' accusation* of the Court of Appeal of Caen, on the other hand, although *sub judice* and therefore not open to comment either, are of legal interest, and merit a reminder of the facts involved.

The start of the legal proceedings was a complaint brought against an unknown person (' x) to which was joined a claim for civil damages This complaint was filed with the most senior examining magistrate of the *Tribunal de Grande Instance* of Cherbourg on 14 January 1994 by the *Comite de Réflexion d'Information et de Lutte Anti-Nucléaire* (CRILAN) It claimed that there had been pollution by radioactive substances of a stream, the Sainte-Hélène, used as a rainwater run-off at ANDRA's storage centre for low and medium-level activity waste with a short or medium half-life

By Ordinance of 12 May 1995, the magistrate responsible for the case took the altogether classic procedural step of appointing an expert to investigate whether there had been any pollution, and if so, to determine its nature and origin

On 15 September 1995, on the other hand, an Ordinance of the same magistrate refused the request by CRILAN, as an interim protective measure, to have work stopped on the roof of the storage centre at La Manche

An appeal was lodged by CRILAN against this Ordinance, leading the *Chambre d accusation* of the Court of Appeal of Caen to hand down its first judgment, on 30 November 1995, following a hearing the day before This judgment ordered that work on the roof be suspended for two months so that an expert assessment could be performed

* This note has been kindly prepared by Mr Michel Treflez Head of Legal Affairs ANDRA

Following this two-month period, a second judgment, dated 7 February 1996, and based on the expert's initial conclusions reported at a hearing on 31 January, authorised work on the roof to begin again

Although the suspension of work was ordered as part of the preliminary investigation only and was not a decision on the merits of the case, it presents some interesting points of law which, though we do not intend to give an opinion on them, may nevertheless be noted

- in the first place, as admitted in the Ordinance itself, the decision to order suspension of the work caused prejudice to ANDRA which was not at the time, and still is not, a party to the proceedings (the complaint having been brought against "x"), and has so far only been heard as a witness,

- in the second place, the decision conflicts with administrative decisions since permission to carry out the work in question, started in 1991 and almost completed at the time of the judgment, had been given in the licensing decree for the nuclear installation, and technical approval had been granted by the Nuclear Safety Authority, and

- lastly, the order to suspend the work was given before completion of the expert report which was intended to determine whether there had been any pollution at all, before, if relevant, trying to identify the cause

It may be noted that should other courts make decisions similar to the one described above, this would constitute a change in the investigative procedure for this type of case

Switzerland

Compensation Due by the Swiss Confederation to the Graben SA Nuclear Power Plant for Refusing to Grant a General Licence Under the Federal Order of 6 October 1978 Concerning The Atomic Energy Act *

In 1970, the Forces Motrices Bernoises SA (FMB) applied to the Swiss Confederation for site authorisation in order to construct a nuclear power plant within the Graben commune in the canton of Bern In 1972, the Federal Department of Transport, Communications and Energy (DFTCE) granted this authorisation, basing its decision on Section 4 of the Federal Act of 23 December 1959 on the Peaceful Uses of Atomic Energy (LEA) In 1974, the FMB applied for a construction licence

In 1975, the ' Centrale nucléaire de Graben SA" (Graben SA), a public limited liability company was created, and this company replaced FMB with regard to the procedures pending before the Federal authorities

In 1979, the Federal Order concerning the Atomic Energy Act (AF/LEA) entered into force, and amongst other things, introduced the principle of a general licence instead of site authorisation The conditions introduced by the new licensing procedure included the obligation to establish that the

* This note has been kindly prepared by Mr Buhlmann Head of the Legal Service in the Federal Energy Office Bern Switzerland

energy produced was required to meet a genuine national need Licences granted by the Federal Council require ratification by the Parliament

Graben SA therefore applied for a general licence At the same time the public limited liability company "Centrale nucleaire de Kaiseraugst SA' (Kaiseraugst SA) also applied for a general licence

In 1981 the Government granted a general licence to Kaiseraugst SA It recognised the need to construct a new power plant in order to prevent a possible electricity shortfall in the 1990s The question as to whether other new power plants would be needed was left open In 1985 Parliament approved the general licence granted to Kaiseraugst SA

In 1987 Graben SA asked the authorities to make a decision on its still outstanding application for a general licence In its reply, the Federal Council stated that it would do so as soon as it had received the conclusions of the report of the Group of Experts on energy scenarios, and when the time came it would decide on the follow-up to be given to the general and construction licence applications made by Graben SA

In November 1988 the Federal Council submitted to Parliament a draft agreement and message to the effect that the Kaiseraugst nuclear power plant should not be built Broadly speaking the message stated that given the slight increase only in electricity consumption during the 1980s the building of the Kaiseraugst nuclear power plant was no longer justified The existing nuclear power plants were more than sufficient to cover needs and if necessary, Switzerland could always import electricity The Federal Council emphasised that the nuclear energy option should remain open which meant that it did not exclude the building of new power plants should this prove necessary

In April 1989, the Federal Council took a stand against two popular initiatives one to stop the construction of new nuclear power plants (moratorium), and the other in favour of abandoning nuclear energy It recommended that the public should reject these two initiatives in the popular vote organised for 23 September 1990 In its preamble, the Federal Council stated that there was already in practice a moratorium on the building of nuclear power plants and that it was not necessary to introduce a special Article into the Federal Constitution It was also of the opinion that it was politically impossible purely and simply, to give up nuclear energy by closing existing plants In the event the public and the cantons voted for the first so-called moratorium initiative but rejected the one requesting the abandonment of nuclear energy The consequence of this vote was the introduction in the transitional provisions of the Federal Constitution of Article 19 the purpose of which was to prohibit the authorities from granting any general licences for the construction of nuclear power plants between 1990 and 2000

One year before the vote, i e in 1989, Graben SA informed the Federal Council that if it did not receive a general licence before 30 November 1989 it would be obliged to ask to begin negotiations with the Federal Council on the subject of the fair compensation referred to in Section 12(4) of the Federal Order concerning the Atomic Energy Act These negotiations were not successful

In August 1990 Graben SA brought an action for damages with interest before the Swiss Federal Tribunal Graben SA asked the Tribunal to order the Confederation to pay SF 300 million together with interest at 6 5 per cent as from 20 August 1990 Graben SA based its claim on Section 12(4) of the Federal Order concerning the Atomic Energy Act As the holder of a site authorisation it claimed to have been entitled to a general licence under the simplified procedure provided for in paragraph 2 of the same Section Under this simplified procedure the authority should have limited its examination to whether the energy produced in the facility would in all likelihood meet a real need in

the country Graben SA claimed that it had been refused the general licence as a result of a series of circumstances which it could not have foreseen Thus, in accordance with the principle of good faith, it considered that it was entitled to compensation for the costs it had incurred in preparing for construction of the power plant At the end of 1991, the damages were estimated at SF 637 294 000

In its preamble, the Federal Tribunal based its jurisdiction on the Judicial Organisation Act which gave it sole jurisdiction as regards litigation based on Federal administrative law involving claims for damages and interest resulting from the official activities of certain persons

The starting point of Swiss atomic legislation is that the use of nuclear energy forms part of the private economy This legislation lists strict conditions which must be fulfilled in order to obtain the necessary licences The legislation is one of control, one consequence of which is that if the applicant fulfils all the conditions, he can legitimately claim entitlement to a licence Should this be refused without good reason, he may claim compensation

There are four main steps in the procedure leading to the operation of a nuclear installation The first concerns site authorisation, now replaced by the general licence The second stage is the construction licence, the third is the start-up licence and the fourth is the operating licence

Under Section 12(4) of the Federal Order concerning the Atomic Energy Act, the claimant is entitled to fair compensation if

- he is the holder of a site authorisation,
- he has been refused a general licence (postponing the granting of a general licence for a limited period is not considered as a refusal),
- he is not responsible for the reasons which led to his being refused a general licence

The Federal Tribunal held that the conditions for application of Section 12(4) of the Federal Order concerning the Atomic Energy Act were fulfilled It ordered the Confederation to pay fair compensation to Graben SA without specifying any amount. It instructed the parties to enter into negotiations to agree on the amount of compensation

In 1995, while negotiations between Graben SA and the Federal Council were going on, Parliament voted an appropriation of SF 225 million, intended as the full amount of fair compensation which the Confederation would pay to Graben SA

At the end of the negotiations, in early 1996, Graben SA and the Federal Council agreed that the compensation amount should be SF 227 million This agreement put an end to the proceedings brought before the Federal Tribunal

United States

Litigation Persists from the 1979 Three Mile Island Accident *

The Three Mile Island (TMI) nuclear power plant accident occurred on March 28, 1979 Now, seventeen years later, litigation arising from that event still persists, with ten personal injury "test" cases about to go to jury trials in Pennsylvania This demonstrates the time it can take to resolve

* This note has been kindly prepared by Omer Brown II Esq of Gallo Brown and Ross Washington D C

claims from a nuclear accident, even where there were relatively small releases of radiation and notwithstanding a national nuclear liability law (the 1957 US Price-Anderson Act) designed to facilitate the handling of claims

On October 17, 1995, the United States Court of Appeals for the Third Circuit issued two new decisions concerning the protracted and complex TMI tort litigation [1] A number of TMI cases for such matters as economic losses evacuation costs and some bodily injury claims were disposed of long ago (for a total of about USD 63 million, including legal defence costs) [2] There still are pending the consolidated personal injury claims of more than 2,000 plaintiffs Based on the two new decisions it will be some time before the TMI accident litigation ends

In 1991 the Third Circuit appellate court had ruled in TMI II that the Price-Anderson Act pre-empts State tort law on the issue of the standard of care owed to plaintiffs by US Nuclear Regulatory Commission (USNRC) licensees [3] The parties in the TMI litigation, then, could not agree on which of the federal (USNRC) regulations, or combination thereof, set the applicable standard of care for nuclear power plant defendants One of the October 1995 decisions specifically found that USNRC s radiation protection standards contained in 10 Code of Federal Regulations, Sections 20 105 and 20 106 (1979) constituted the federal standard of care, rather than the USNRC s As-Low-As-Reasonably-Achievable (ALARA) regulations [4] Sections 20 105 and 20 106 in 1979 set 0 5 rem as the maximum yearly radiation exposure allowed for the general public [5]

The first October 1995 decision cited the fact that the USNRC, in adopting the ALARA concept had indicated the criteria were not to be considered "radiation protection standards ' The court noted the USNRC regulations [Section 50 36a(b)] expressly permit continued operation of a nuclear plant if radiation releases rise above the ALARA levels, so long as they remain ' within the limits specified in [Section 20 106] " The court was persuaded the specific dose regulations represent the considered judgment of the relevant US regulatory bodies on the appropriate levels of radiation to which the general public may be exposed under all conditions, accident and normal operations alike It said that if jurors were to make the ALARA determination, then this "results essentially in a negligence standard " Adopting ALARA as part of the standard of care would put juries in charge of deciding permissible radiation exposure levels and, more generally, the adequacy of safety procedures at nuclear plants This, the court observed, has been explicitly reserved to the federal government in general and the USNRC specifically The court concluded its holding protects the public and provides nuclear plant operators with a "definitive standard by which their conduct will be measured

The appellate Court held that the duty of care owed to plaintiffs is measured by whether defendants released radiation in excess of the levels then permitted by Sections 20 105 and 20 106 as measured at the boundary of the facility, not whether each plaintiff was exposed to those excessive radiation levels The Court declined in the first October 1995 decision to rule on whether federal law controls other required aspects of plaintiffs' tort claims, such as causation and damages because they were not at issue This decision thus defines only two elements of a negligence cause of action the duty and breach of duty

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1 In re TMI 67 F 3d 1103 and 1119 (3d Cir 1995)

2 See e g In re TMI Litig Cases Consol II (TMI II) 940 F 2d 832 (3d Cir 1991) cert den 503 U S 906 (1992) (recounting some of the complicated procedural history of the TMI accident litigation)

3 *Ibid* at 859

4 67 F 3d 1103

5 See 10 Code of Federal Regulations Section 20 1301 (1995) now setting the annual permissible exposure rate for the public at 0 1 rem (1 mSv)

Ten personal injury test cases are expected to go to trial using this standard starting in June 1996 (Five each are to be selected by plaintiffs and defendants) As part of the causation inquiry, each plaintiff will have to demonstrate exposure to radiation during the TMI accident, as well as damages Depending upon the outcomes of the ten test cases, subsequent determinations will be made on whether to dismiss, try or settle the approximately 2,000 other pending cases

The second appellate Court decision released in October 1995 affirmed the ruling of the lower court granting TMI plaintiffs the right to attempt to recover punitive damages from the privately-owed plant operators [6] Plaintiffs have asserted that defendants showed wilful, wanton and reckless indifference to information concerning faulty plant equipment and design at TMI Under the laws of many US jurisdictions (including the Commonwealth of Pennsylvania where the TMI accident occurred and whose tort law generally is being applied in the TMI cases), the function of punitive damages is to deter and punish egregious behaviour

Earlier, the Supreme Court of the United States in the well-known case of Karen Silkwood had ruled that punitive damages were not pre-empted by the pervasive federal nuclear regulatory regime in all situations involving nuclear licensees [7] The 1988 Price-Anderson Amendments Act made certain changes to the earlier statute to clarify federal jurisdiction in cases involving "public liability actions," and specifically precluded punitive damages in cases where the US Government is obligated to make indemnification payments In its October 1995 decision, the Third Circuit court found the 1988 Amendments were not intended to change the result the US Supreme Court had reached in *Silkwood* (e g , by altering the nature of tort claims, including Pennsylvania's historic recognition of punitive damages as a form of liability) The October 1995 decision, nevertheless, emphasised the trial court has authority to prioritise various claims if punitive damages are awarded, so that the applicable limitation on liability set by the Price-Anderson Act is not exceeded (In 1979, the limit was USD 560 million, with the first USD 140 million coming from insurance The limit for power plants now is about USD 9 billion, with the first USD 200 million coming from insurance)

The two October 1995 decisions were interlocutory appeals that answered questions of law certified by the lower court They merely set certain parameters for future personal injury trials Both presage that the already complex and long tort litigation arising from the 1979 TMI accident will continue for some time to come

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6 67 F 3d 1119

7 *Silkwood v Kerr-McGee Corp* 464 U S 238 (1984) See Nuclear Law Bulletin Nos 37 and 38

ADMINISTRATIVE DECISIONS

Finland

Decision on the Financial Provision for the Cost of Nuclear Waste Management (1995)

The Council of State Decision No 165/88 on the Financial Provision for the Cost of Nuclear Waste Management has been amended in 1995 with regard to the detailed operation of the Finnish Nuclear Waste Management Fund (see Nuclear Law Bulletin No 41) This Decision was made pursuant to the 1987 Law on Nuclear Energy

The amending Decision No 1272/95 provides that the fund target for a particular facility, which is essentially the assessed liability (total, maximum liability) for that facility less a proportion of certain future costs, may be maintained at a higher level than would be required in the case of a reduction in the assessed liability for that facility, provided that the licence-holder agrees The licence-holder may withdraw its consent The Decision entered into force on 20 November 1995

Germany

Recommendations of the Reactor Safety Commission and of the Radiation Protection Commission (1995)

In September and October 1995, the Reactor Safety Commission and the Radiation Protection Commission, both of which are consultative bodies to the Federal Minister for the Environment Nature Conservation and Reactor Safety, issued recommendations on the site and on the nuclear safety concept of the research reactor Munich II (FRM-II) (*Bundesanzeiger*, 1996 No 26a)

The research reactor Munich II is situated in a suburb of Munich Because the site is in a densely populated area the licensing procedure is a most sensitive matter from both a legal and a political point of view

The recommendations of the Commissions summarise their appraisal by indicating that the concept of the research reactor meets the necessary safety requirements Details especially of radiation protection and of the radiological protection of workers, will be assessed at a later stage of the licensing procedure

United Kingdom

Privatisation of the United Kingdom Atomic Energy Authority (AEA Technology) (1995)

The 1995 Atomic Energy Authority Act, which came into force on 8 November 1995, contains provisions which allow for the privatisation of a part, or parts, of the United Kingdom Atomic Energy Authority, (a statutory corporation established in 1954) It was enacted with a particular view to enabling the privatisation of the commercial division of the Authority, known as AEA Technology

The Act grants to the Secretary of State of Trade and Industry the power to give the Authority a direction requiring it to make one or more transfer schemes for the transfer to any person or persons of such property, rights and liabilities of the Authority as are specified in or determined in accordance with the scheme The scheme requires the approval of the Secretary of State and the Treasury before it can take effect, and the Secretary of State has power to modify it before giving his approval The scheme may not provide for the transfer of a nuclear site licence granted under the Nuclear Installation Act 1965 (see Nuclear Law Bulletin No 33) or for the transfer of any freehold land comprised in any licensed nuclear site

On 9 February 1996, the Secretary of State directed the Authority to make such a scheme by 11 March 1996 The scheme, which provides for the transfer of the property, rights and liabilities comprised in the commercial division of the Authority to a company wholly owned by the Crown and registered by the name of AEA Technology plc, was made on 7 March 1996 and is expressed to come into force on 31 March 1996

NATIONAL LEGISLATIVE AND REGULATORY ACTIVITIES

Australia

Radiation Protection

Recommendations and Standards on Radiation Exposures (1995)

In June 1995 Australian authorities (the National Occupational Health and Safety Commission and the National Health and Medical Research Council) adopted two new instruments pertaining to the limitation of exposures to ionizing radiation. The first is entitled "Recommendations for Limiting Exposure to Ionizing Radiation", and the second is "National Standard for Limiting Occupational Exposure to Ionizing Radiation" Both instruments are based upon the 1990 Recommendations of the International Commission on Radiological Protection (Publication No 60)

The Recommendations instrument requires that occupational exposures must not exceed 50 mSv in a year and that the average annual exposure over any consecutive five year period must not be greater than 20 mSv However, the regulatory authority for occupational exposures has the discretion to make allowances for exceptional circumstances and to either permit an extension of the average period to ten years or to permit the annual 50 mSv limit to apply to a maximum period of five years

Public exposures are not to exceed 1 mSv in a year although occasional higher exposures may be allowed provided that the five year average does not exceed the 1 mSv limit

With regard to protection of the fetus, the Recommendations state that once a pregnancy is declared by an employee, doses received by the fetus during the remainder of the pregnancy while the employee is at work must be consistent with the public effective dose limit

The Recommendations also address the case of volunteers receiving ionizing radiation in the course of medical research Such exposures must be justified by an ethics committee, the informed consent of the volunteer must be obtained, and where the dose is of no benefit to the volunteer, it is recommended that the dose limit not exceed 5 mSv in a year nor 10 mSv over five years Exposure to children should not exceed a cumulative total of 5 mSv up to the age of 18 years and should be permitted only if the research results cannot be obtained from adult studies and the consent of those legally responsible for the child has been obtained

Austria

Regulation of Nuclear Trade

Proposed Amendment to the Criminal Code Concerning the Illegal Trade of Nuclear Materials (1996)

The Federal Ministry of Justice has proposed an amendment to the Austrian Criminal Code which would provide law enforcement agencies with greater powers to counteract the increasing threat of illegal trade in nuclear materials and substances

This amendment, if enacted, would make illegal a wide range of activities including the storage, transport, import and export of certain nuclear materials and substances Such materials and substances are broadly defined in the amendment and they include certain technologies and equipment A maximum sentence of three years imprisonment would apply to all offences except where the illegal trading has increased the risk that such materials or substances would be used for nuclear weapons, in which case the maximum penalty would be five years imprisonment Where the offence causes the death of a person or entails a number of persons in distress, the penalty would be 5-15 years Where the offence causes the death of a number of persons, a sentence of 10-20 years or a life-sentence would apply

The amendment was submitted to the Austrian Parliament in January 1996 in the context of a revision of the Criminal Code

Belgium

Radiation Protection

Implementing Decree for the Law of 1994 Concerning Ionizing Radiation and the Federal Agency for Nuclear Control

On 15 April 1994 the Belgian Parliament passed a Law relating to the protection of the public and of the environment against the danger of ionizing radiation and concerning the Federal Agency for Nuclear Control (published in the *Moniteur Belge* of 29 July 1994) This Law abrogates the basic Law of 29 March 1958 on the protection of the public against the danger of ionizing radiation (See Nuclear Law Bulletin No 53) However, the provisions of this Law will only enter into force upon the issuance of a Royal Decree issued by the Cabinet of Ministers, a Decree which has not yet been promulgated

Several implementing Decrees with regard to the Law of 15 April 1994 are in the course of being prepared The principal Decree deals with the revision of the Royal Decree of 28 February 1963 which itself contains general regulations for the protection of the public and of workers against the dangers of ionizing radiation The objective of this revision is to incorporate the provisions of the Decree of 1963, which Decree will later be repealed, into the Law of 15 April 1994 This revision Decree has already been approved by the Cabinet of Ministers and has been sent to the Council of State for its opinion This last step is an obligatory part of the Belgian legislative process This Decree is expected to become finalised as a Royal Decree during 1996

Brazil

Organisation and Structure

Resolution of the National Nuclear Energy Commission (CNEN) (1995)

By Resolution adopted on 21 August 1995, the National Nuclear Energy Commission

- confirmed the decision of the President of CNEN to designate the Brazilian Institute for Nuclear Quality (IBQN) as an independent technical advisory body in accordance with CNEN Decree No 371/94, published in the *Official Journal* No 4 of 5 January 1995 (See Nuclear Law Bulletin No 28), and

- approved, on a provisional basis, the quality assurance programmes for the acquisition proposed fabrication or the actual fabrication of all fuel elements

The objective of this Resolution is to set forth the conditions required by the quality assurance programmes for the acquisition, proposed fabrication or actual fabrication of fuel elements used in nuclear power plants This provisional measure will apply together with other rules already adopted by CNEN

Resolution Creating Ten Technical Committees in Support of the National Council for the Environment (CONOMA)(1995)

The National Council for the Environment, established by Resolution No 5 of 9 October 1995 is to be supported from now on by ten permanent technical committees in each of the special areas over which it has jurisdiction These committees are composed of members from various Brazilian institutions

The role of the committees for energy and transport is to prepare and analyse proposals for power programmes, including nuclear power programmes

The jurisdiction of these specific committees extends to all forms of transport and energy (including nuclear energy), as well as to standards for the protection of the environment in the energy sector After analysis by the appropriate committee, the proposals are submitted for adoption by CONOMA

Radiation Protection

Ministerial Order on Radiation Protection and Nuclear Safety (1995)

This Ministerial Order No 1 of 25 August 1995 establishes a system of certification for all laboratories responsible for monitoring the radiation exposure of persons working in nuclear reactor installations or in other installations under the authority of CNEN

The Order, which came into force on 4 October 1995, provides that each certificate will be issued by the CNEN Institute for Radiation Protection and Dosimetry (IRD) The certificate will be obtained upon application therefor to the IRD The application must be accompanied by documents verifying the legal status of the applicant and its qualifications, and the Institute is to assess each application on

the basis of pre-determined criteria A certificate, once issued, is valid for a period of three years except where the certificate holder no longer meets the criteria required for certification

Transport of Radioactive Materials

Ministerial Decree Concerning Transport by Inland Waters (1995)

This Ministerial Order No 11, dated 11 March 1995 (published in the *Official Journal* on 21 September 1995) regulates the transport of dangerous materials in navigable inland waters The definition of dangerous materials corresponds to that given in the Code of Transport of Dangerous Materials of the International Maritime Organisation It is to be noted that this Code classifies radioactive materials (class 7) as dangerous materials

By their very nature such materials are subject to a series of mandatory requirements, depending upon the case, either a simple declaration, a notification or an authorisation will be required However, in all cases full and accurate information on the materials transported must be provided

Regulation of Nuclear Trade

Law Relating to the Export of Sensitive Goods and of Consequential Services (1995)

Law No 9 112 of 10 October 1995 governs the export of goods deemed to be sensitive Such goods, according to its provisions, include military equipment, articles which have more than one use and those which are used in the nuclear, chemical or biological fields

Goods belonging to the nuclear field (and deemed sensitive from the point of view of the non-proliferation of nuclear weapons) are covered in a very broad manner, from equipment used in nuclear installations to actual radioactive materials

The Law provides for a system of export control for such goods by requiring the presentation of documents indicating whether all goods to be exported are for provisional or end use The Law also establishes an interdepartmental Commission for the export control of sensitive goods The Commission keeps an up to date listing of goods deemed to be sensitive in order to assure efficient control, and applies administrative sanctions in cases of failure to comply with the provisions of the Law The sanctions may take several forms, ranging from a simple warning to suspension of export rights

Denmark

Radiation Protection

Orders of the National Board of Health amending previous Orders on the Medical Application of Ionizing Radiation (1995)

In 1995, the National Board of Health issued seven Orders concerning the medical application of ionizing radiation These Orders, all of which amended existing Orders of the National Board of Health, were made to take into account the provisions contained in Council Directive 93/42/EEC of

14 June 1993 regarding EC labelling of medical devices The citation of the seven Orders are as follows

- National Board of Health Order No 18 of 12 January 1995 This Order amends Order No 59 of 20 February 1978 (see Nuclear Law Bulletin No 25) concerning medical therapy X-ray installations with voltage not exceeding 50 kV (skin therapy),

- National Board of Health Order No 19 of 12 January 1995 This Order amends Order No 60 of 20 February 1978 (see Nuclear Law Bulletin No 25) concerning medical therapy X-ray installations with voltage above 50 kV but not exceeding 400 kV (deep therapy),

- National Board of Health Order No 20 of 12 January 1995 This Order amends Order No 319 of 23 May 1991 (see Nuclear Law Bulletin No 50) concerning accelerators for radiotherapy with energies from 1 MeV up to and including 50 MeV,

- National Board of Health Order No 21 of 12 January 1995 This Order amends Order No 464 of 25 September 1980 concerning larger dental x-ray installations,

- National Board of Health Order No 22 of 12 January 1995 This Order amends Order No 493 of 8 September 1977 (see Nuclear Law Bulletin No 25) concerning equipment for intra-oral dental X-ray installations with voltage not exceeding 70 kV, as previously amended by Order 36 of 25 January 1993,

- National Board of Health Order No 23 of 12 January 1995 This Order amends Order No 217 of 29 April 1977 (see Nuclear Law Bulletin No 22) concerning diagnostic medical X-ray installations, as previously amended by Order No 286 of 20 May 1988 (see Nuclear Law Bulletin No 45),

- National Board of Health Order No 24 of 12 January 1995 This Order amends Order No 485 of 18 November 1985 (see Nuclear Law Bulletin No 39) on the use of unsealed radioactive sources in hospitals, laboratories, etc , as previously amended by Order No 1135 of 15 December 1992 and Order No 548 of 23 July 1993

The National Board of Health also issued Order No 918 of 4 December 1995 on the use in Denmark of sealed radioactive sources in industry, hospitals, laboratories, etc This Order applies both to an individual source and to an apparatus containing a sealed source

Germany

Radioactive Waste Management

General Mining Ordinance Implementing EC Directives (1995)

The Federal Ministry for Economy, in concurrence with the Federal Ministers of Labour and Social Affairs and of Traffic, issued on 23 October 1995 an Ordinance concerning all aspects of mining activities (General Mining Ordinance) (*Bundesgesetzblatt*, 1995, I, p 1466)

The Ordinance establishes a framework for safety and health protection with regard to mining activities, including underground storage It therefore applies directly to underground radioactive waste repositories

The Ordinance is the national implementation mechanism for the following EC Directives

- Directive 89/391/EC of 12 June 1989 (O J E C No L 183),
- Directive 89/655/EC of 30 November 1989 (O J E C No L 393),
- Directive 89/656/EC of 30 November 1989 (O J E C No L 393),
- Directive 92/58/EC of 24 January 1992 (O J E C No L 245)
- Directive 92/91/EC of 3 November 1992 (O J E C No L 348),
- Directive 92/104/EC of 3 December 1992 (O J E C No L 404)

Transport of Radioactive Materials

Ordinances on the Transport of Dangerous Goods by Road Railroad, Sea and Inland Waterways (1995-1996)

The Federal Minister of Traffic issued a series of Ordinances to amend the Ordinances on the Transportation of Dangerous Goods by Road, Railroad, Sea and Inland Waterways (Nuclear Law Bulletin Nos 16, 23, 25, 36, 47, 48, 55) The amendments aim at adapting the respective Ordinances to the revised texts of international regulations, as e g the International Maritime Code for Dangerous Goods (IMDG Code) or the 1995 Regulation on Transportation of Dangerous Goods on the Rhine (ADNR) The amendments cover all kinds of dangerous goods including radioactive substances These Ordinances are the following

Transport by road Fifth Ordinance to amend the Dangerous Goods Ordinance – Road of 18 July 1995 (*Bundesgesetzblatt*, 1995, I, p 1021)

Transport by railroad Fifth Ordinance to amend the Dangerous Goods Ordinance – Railroad of 15 December 1995 (*Bundesgesetzblatt*, 1995, I, p 1847),

Transport by sea Second Ordinance to amend the Dangerous Goods Ordinance – Sea of 24 August 1995 (*Bundesgesetzblatt*, 1995, I, p 1074)

Special regulations apply to the transportation of dangerous goods on board of roll-on/roll-off ships in the Baltic Sea and on board of ferries in the North Sea The legal basis for the transportation of dangerous goods on ro/ro ships in the Baltic Sea is a Memorandum of Understanding signed in Helsinki on 23-26 August 1994 by Germany, Denmark, Finland, Poland and Sweden (*Bundesanzeiger*, 1995, No 151 p 8890) Germany also applies the Memorandum also to ferry traffic between its mainland and its islands in the North Sea The Memorandum takes into account the recommendations of the International Maritime Organisation (IMDG-Code), the International Regulation on the Transport of Dangerous Goods by Rail (RID) and the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)

Transport by inland waterways First Ordinance to amend the Dangerous Goods Ordinance – Inland Waterways of 18 January 1996 (*Bundesgesetzblatt*, 1996, I, p 45)

Regarding the transportation of dangerous goods on the Rhine and the Moselle rivers (Nuclear Law Bulletin No 55), an Ordinance of 20 December 1995 (*Bundesgesetzblatt*, 1995 II, p 1058) gives effect to annexes A, B 1 and B 2 of the ADNR and the respective regulations regarding the Moselle River as revised on 18 May 1995 and 15 November 1995 respectively by the competent international

Rhine and Moselle bodies The date of entry into force for the Rhine River is 1 January 1996 and for the Moselle River is 1 July 1996

Regulations on Nuclear Trade

Ordinances to amend the Foreign Trade Ordinance (1995)

The Ordinance to amend the "Export List" – Annex AL to the Foreign Trade Ordinance – of 17 February 1995 was published in *Bundesanzeiger*, 1995, No 110a, p 24 Section 0 of the list enumerates nuclear material, installations and equipment which are subject to the special regime under the Foreign Trade Ordinance and the Foreign Trade Act

The Ordinance of 17 February 1995 to amend the Foreign Trade Ordinance (*Bundesanzeiger* 1995, No 104, p 6165) amends the regulations regarding the export of goods with dual use character, and at the same time implements the EC Council Regulation No 3381/94 of 19 December 1994 (O J E C 1994, No L 367, p 1) The export of dual use goods is now governed in general by EC law This means that for the first time there is a joint approach to this issue among the fifteen member States of the EU, thus providing far-reaching international harmonisation of the respective foreign trade laws However, there are still fields of national discretion The EC regulation is limited to the export of dual use goods in the form of hardware Member States are free to extend that control to software also The new Section 4b of the amended Ordinance also establishes a licensing requirement for the export of dual use software

Based upon that Ordinance, the EC Council Regulation as amended (O J E C 1995 No L 90 p 1), and the EC Council Decision of 19 December 1994, as amended (O J E C 1994 No 367 p 8 1995, No L 90 p 2) the Federal Export Office issued general licences regarding the export of goods with dual use character, namely general licences Nos 11, 12 13 and 14 of 1 June 1995 (*Bundesanzeiger* 1995, No 114, p 6704 *et seq*) The said licenses provide for special conditions to be met in the case of export of dual use goods listed in Section 0 of the Export List (nuclear material, installations and equipment including the respective software)

The Thirty-seventh Ordinance to amend the Foreign Trade Ordinance of 1 December 1995 (*Bundesanzeiger* 1995, No 230, p 12253) provides for additional regulations especially in the procedural sector to harmonise the Foreign Trade Ordinance with EC law It covers in particular the import régime of the European Union

Two Ordinances of 1 and 19 December 1995, respectively, amend the Import List – Annex to the Foreign Trade Act – (*Bundesanzeiger*, 1995, No 230, p 12253 and No 245 p 12981) The Ordinances also ensure consistency with criteria established under EC Law

The dissolution of the Co-ordinating Committee for East-West Trade Policy (COCOM) entailed changes to the national foreign trade legislation Necessary amendments were provided for in the Ordinance to amend the Foreign Trade Ordinance of 17 February 1995

Hong Kong*

Radiation Protection

Regulation on Ionizing Radiation (1995)

This Regulation amends the principal Regulation providing for the effective protection of workers operating irradiating apparatus from ionizing radiation A number of technical amendments are introduced, and the list of persons who may operate irradiating apparatus is extended to cover the following diagnostic radiographers, therapeutic radiographers, registered dentists, and dental surgery assistants

Indonesia

Environmental Protection

Decree Requiring Environmental Impact Studies for the Construction and Commissioning of Nuclear Power Plants (1994)

Decree No 445, made by the Director-General of the National Atomic Energy Agency (BATAN) provides for the application of Regulation No 51 concerning environmental impact studies (1993), and of Decree No 14, made by the Ministry of the Environment, concerning Guidelines for the preparation of such studies (1994)

The Decree, made on October 24, 1994, provides that such environmental impact studies are required for the construction and commissioning of nuclear reactors having an energy output of more than 100 Kwt

Decree Requiring Environmental Impact Studies for the Construction and Commissioning of Nuclear Installations Other than Reactors (1994)

Decree No 447, made by the Director-General of the National Atomic Energy Agency (BATAN) provides for the application of the same instruments as does Decree No 445 However, this Decree, which was also made on October 24, 1994, concerns nuclear installations other than nuclear reactors The Decree provides that environmental impact studies are required for the following installations

- a nuclear fuel fabrication facility having an annual production capacity of more than 50 fuel elements,
- a radioactive waste installation,
- an irradiator installation which has radiation sources with an activity level of more than 1 850 TBq (5000 Ci), and
- all radioisotope production facilities

* This note has been taken from the International Digest of Health Legislation Vol 46 (4) 1995

Decree on the Technical Guidelines for Environmental Management and Monitoring Procedures (1994)

Decree No 446 of 24 October 1994, made by the Director-General of the National Atomic Energy Agency (BATAN), requires the application of Decree No 12 of 1994, made by the Minister of State for the Environment, to activities or projects in the nuclear field which are not expected to have significant impacts upon the environment Such activities or projects are required to put into place environmental management procedures and environmental monitoring procedures in accordance with the conditions specified in relevant regulations

These procedures are required for the construction and operation of the following types of activity or project

- a nuclear research reactor having an energy output of less than 100 KW/th
- a nuclear fuel fabrication facility with an annual production capacity of less than 50 fuel elements,
- an irradiator installation having a radiation source with an activity of less than 1 850 TBq (5000 Ci),
- exploration of nuclear minerals,
- a radioisotope laboratory, type A and B

Latvia

Radiation Protection

Draft Regulation for Protection Against Ionizing Radiation

This Regulation, which is currently being drafted in Latvia and which deals with radiation protection, will be made pursuant to specific provisions of the Law of Radiation Protection and Nuclear Safety of 1 December 1994 (the text of this Law is reproduced in the *Supplement to Nuclear Law Bulletin* No 55)

This Regulation will be made under Sections 2 and 4 of the 1994 Law which clearly refer to the "specific requirements for ionizing radiation facilities' made by "Cabinet of Ministers regulations

The scope of this draft Regulation is very broad and covers numerous activities manufacturing import, export, transportation, trade and use of all radioactive substances and sources of ionizing radiation in excess of 5 keV

The purpose of this Regulation is to protect the public, workers and the environment against the harmful effects of ionizing radiation coming from any source and to ensure the safe use of radiation sources

The draft Regulation will establish a system of radiation safety and protection which will be governed by the competent authorities through the issuance of licences and through inspection

procedures The competent agencies in this regard are the Radiation and Nuclear Safety Inspectorate, the Environmental Health Centre and the Radiology Centre

Chapter XV of this draft regulation deals specifically with the early notification of nuclear accidents The provisions of this chapter take into account the 1986 IAEA Convention on Early Notification of a Nuclear Accident as well as the general requirements of the European Commission and those of bilateral treaties to which Latvia is a party

The Cabinet of Ministers will make this regulation in the fall of 1996

Draft Regulation on the Issuance of Licences for Activities with Radioactive Substances and Other Ionizing Radiation Sources

This draft Regulation will be made pursuant to Sections 6, 7 and 9 of the Law of 1994 on Radiation Protection and Nuclear Safety These three Sections provide that "the Cabinet of Ministers shall establish the procedure by which licences for activities with ionizing radiation sources are to be issued', and "for the issuance of special licences for ionizing radiation facilities of state significance"

The purpose of this draft regulation is to establish strict control over all activities involving radioactive substances or other ionizing radiation sources The following authorities are empowered to issue licences

- the Environmental Health Centre of the Ministry of Welfare for medical applications with the exception of X-ray equipment,

- the Radiology Centre of the Ministry of Welfare for X-ray equipment,

- the Export-Import Control Department of the Latvian Development Agency for the export, import and transit of nuclear materials, and

- the Radiation and Nuclear Safety Inspectorate of the Ministry of Environmental Protection and Regional Development for all other activities

To obtain a licence, the applicant must complete a special declaration form which, accompanied by a number of other documents, will be verified by the appropriate authority Once issued, licences are valid for a period of three years However, a licence may be revoked for a violation of its terms Upon expiration of the term of a licence, renewal is not automatic, rather, the licensee must make a new application

The Cabinet of Ministers is expected to make this regulation in the summer of 1996

Portugal

Organisation and Structure

Reorganisation in the Nuclear Sector (1995)

Decree-Law No 296-A/95 of 17 November 1995 deals with a new distribution of tasks and responsibilities in the public service under the new Portuguese Government

During the reading of this Decree-Law, two changes in the nuclear field were indicated

- the Technology and Nuclear Institute (ITN), created by Decree-Law No 324-A/95 of 30 December 1994 had been under the jurisdiction of the Ministry of Planning and State Administration (see Nuclear Law Bulletin No 55) From now on this Institute will be under the authority of a new Ministry created by this Decree-Law, the Ministry of Science and Technology,

- the General Directorate for Energy, created by Decree-Law No 548/77 (see Nuclear Law Bulletin No 22 and No 53) and the National Institute of Industrial Engineering and Technology, both of which had been under the jurisdiction of the Ministry of Industry and Energy, have now been transferred to the authority of the Ministry of Economic Affairs

Spain

Organisation and Structure

Royal Decree Modifying the Structure of the Nuclear Safety Council (1995)

The Nuclear Safety Council, which was established by the Law of 22 April 1980 (see Nuclear Law Bulletin No 25), has already undergone a re-organisation pursuant to the Royal Decree of 1989 (See Nuclear Law Bulletin No 30 and No 44) This new Decree, No 2209/1995 of 28 December 1995, introduces a further modification to the Council's establishing legislation

The modification deals essentially with the structure of the Council New areas of management have been created and placed under its authority Furthermore, the tasks assigned to the general Secretariat have been redefined The most significant change concerns the Technical Directorate which has been placed under the direction of the general Secretariat In fact, the Technical Directorate has been totally restructured into several smaller divisions, each relating to a specific subject such as nuclear reactor control, the nuclear fuel cycle, radiation protection, etc As a consequence certain other divisions have been eliminated

This enactment published in the *Official Journal* on 12 January 1996 came into effect the day following its publication

Uruguay

Radiation Protection

Provisions relating to Radiological Emergencies and to Radiation Control (1996)

Law No 16 736 of 5 January 1996, which approved the national budget for the 1995-2000 term of government in Uruguay, contains two articles relating to ionizing radiation

Section 299 creates a control and assistance plan for radiological emergencies throughout the entire country In connection therewith, a special intervention group has been established to respond to such situations and has been given the necessary human and logistical resources to do so

Section 302 establishes a dosimetry service for persons who are exposed to ionizing radiation It also designates the National Nuclear Technology Directorate as the authority with jurisdiction to accredit and regulate this service and to obtain all necessary information with respect thereto

INTERNATIONAL REGULATORY ACTIVITIES

European Union

Resolution of the European Parliament on the European Union Energy Policy (1995)

On 10 October 1995, the European Parliament adopted Resolution No C 287/37, having regard to both the Green Paper of the European Commission (EC) entitled "For a European Union energy policy" (COM(94)0659-C4-0026/95) and to its own resolution of 12 March 1992 on the common energy policy (*O J E C 94 of 13 April 1992*)

The purpose of this Resolution is to set out the long-term policy of the EU in the field of energy, to specify the manner in which it relates to the policies of Member States and to set forth the areas where there is a need for convergence

By this new Resolution, Parliament has emphasised the three objectives of the European energy policy security of supply, competitive prices and protection of the environment Moreover, it calls upon the EC to negotiate arrangements with banking establishments to provide advance funding for energy saving measures

By the terms of this Resolution, the EC is called upon to promote research in order to increase the safety of nuclear energy by a variety of means the development of "new advanced nuclear reactors", the safe processing of radioactive waste, the re-use of fuel (mox fuel), helping the countries of Central and Eastern Europe to develop an energy development plan with a view to optimising the sources of electrical power; and the promotion of research into the health effects of radiation exposure on human populations

Emphasis is also placed upon the need to draw up common European safety standards for nuclear power stations in the EU, to establish guidelines on safety requirements for power stations for which the EU intends to grant loans, and to develop a strategy for the management of nuclear waste Furthermore, co-operation with the Russian Federation and the countries of Central and Eastern Europe needs to be strengthened In this regard, the Parliament calls for an ambitious programme of applying Western safety standards to the nuclear power stations of the East

On the other hand, the Parliament is very aware of the need to include the cost of environmental protection in the price of energy production and suggests the possibility of instituting an energy tax that would apply equally to fossil fuels and to nuclear energy The Parliament also calls upon the Commission to take an active part in the Oslo and Paris Commission (OSPAR) on the decision-making procedure for the dismantling of off-shore installations The Commission ought, therefore to promote the major principles of environmental protection, safety and security, and energy efficiency

The Parliament recognises the contribution of nuclear energy to the reduction of CO_2 and confirms the responsibility of States in making their own choices of energy sources, choices which must take into account the environment and the objectives agreed to at Rio de Janeiro (1992) and at Berlin (1995) with regard to gaseous emissions It has confirmed therefore, that decisions concerning the siting of nuclear power plants rests, in the final analysis, with the national authorities

BILATERAL AGREEMENTS

Austria–Germany

Agreement on the Exchange of Information and Experience in the Field of Radiation Protection (1994)

The Governments of Germany and Austria have decided to continue the Agreement made by the German Democratic Republic and the Republic of Austria on the exchange of information and experience in the field of radiation protection, which entered into force on 3 May 1988 (published in the *Bundesgestzblatt* 1995, II, p 482) This Agreement has been amended to take into account the reunification of Germany in 1990 (see Nuclear Law Bulletin No 46)

The Agreement contains five articles and one annex It applies in respect of nuclear installations and activities that are defined in Article I of the 1986 Convention on the Early Notification of a Nuclear Accident

The Parties to the Agreement are to meet, in principle, once a year to exchange information However they may also meet under special circumstances, to discuss general developments in the peaceful utilisation of nuclear energy, particularly with regard to the methods and results of radiation protection mechanisms The Agreement provides, moreover that the Parties will keep each other informed of the state of their respective nuclear installations They are equally obliged to notify each other, directly and immediately, of any nuclear accident and of any increase in the levels of radioactivity within their territories

This revised Agreement, of unlimited duration, entered into force on 1 December 1994

Brazil–India

Memorandum of Agreement on Co-operation in the Field of Nuclear Energy (1996)

On 27 January 1996 the National Nuclear Energy Commission of Brazil and the Atomic Energy Commission of India signed a Memorandum of Agreement for co-operation on the peaceful utilisation of nuclear energy This Memorandum reflects the desire of both Parties to place more emphasis upon the exchange of research information between their two countries in this area except for confidential information obtained with the collaboration of a third party

The Parties have chosen the following subjects as their main priorities nuclear safety, radiation protection, research and development on the thorium fuel cycle, food irradiation nuclear techniques for agriculture and medicine and other areas of common interest

Brazil–United States

Protocol to Extend the 1984 Science and Technology Co-operation Agreement (1994)

On 21 March 1994, Brazil and the United States signed a Protocol for the purpose of amending and extending their Science and Technology Co-operation Agreement (including nuclear technology) which had been signed on 6 February 1984 and which had come into force on 15 May 1986 This Protocol extends the term of the Co-operation Agreement until 15 November 2001, at which time the Agreement will be automatically renewed for successive five year periods, unless one of the Parties decides to terminate the Agreement

The provisions contained in the Agreement remain unchanged The co-operation still extends to the fields of agriculture, health, space and all of the scientific and technical fields that the Parties may wish to include However, the Protocol introduces two new supplementary annexes, one relating to intellectual property and other to security and confidentiality of information

This Protocol entered into force in Brazil pursuant to Decree No 189/95, published in the *Official Journal* of 18 December 1995

Bulgaria–United States

Agreement for Co-operation in the Field of Peaceful Uses of Nuclear Energy (1996)

This Agreement, which was signed on 21 June 1994 in Sofia and which entered into force on 29 March 1996, provides for trade in major nuclear commodities such as nuclear material, reactors and major nuclear reactor components The Agreement will have a duration of thirty years

Canada–Slovenia

Co-operation Agreement in the Field of Peaceful Uses of Nuclear Energy (1995)

Slovenia and Canada, both being Parties to the Nuclear Non-Proliferation Treaty of 1968, have concluded an Agreement to strengthen their co-operation in the nuclear field This Agreement covers all aspects of the development, utilisation and exploitation of nuclear energy for peaceful purposes The Agreement provides specifically for

- the exchange of technical information this includes research and development, health, nuclear safety, protection of the environment and technology transfer;
- the supply of nuclear materials and equipment (as further described in annexes B, C and D to the Agreement),
- the carrying out of research and development projects with respect to the utilisation of nuclear energy in industry, medicine and agriculture, and

– the promotion of training, assistance and services, including the exchange of experts

This Agreement also contains provisions ensuring the confidentiality of the information exchanged The authorities of both Parties (the Slovenian Nuclear Safety Administration and the Canadian Atomic Energy Control Board) have already signed an administrative arrangement in this regard

The Agreement was ratified by Slovenia on 30 January 1996 and was published in the *Official Gazette* No 3/96 on 16 February 1996

China–Korea

Co-operative Agreement Concerning Peaceful Uses of Nuclear Energy (1994)

This Agreement was made between the Republic of Korea and the People s Republic of China on 31 October 1994 Under the terms of this Agreement, co-operation in the peaceful uses of nuclear energy covers a very broad scope Besides the key areas of radiation protection nuclear safety and the management of radioactive waste, the co-operation includes the exchange of scientific and technical information, the exchange and training of scientific and technical personnel, the preparation of joint studies in the fields of scientific research and development, and the carrying out of research and development projects to pursue the applications of nuclear energy in agriculture, medicine and other areas

Nuclear materials, equipment and technology covered by this Agreement may not be used for the production of nuclear weapons or explosive devices of any kind The Parties have provided that this commitment shall be subject to IAEA inspection by means of non-proliferation agreements

The Agreement permits the transfer of nuclear materials, equipments and technology to a third Party, provided that the Parties have first consulted and indicated, in writing, their agreement to such transfer Furthermore the third Party will be required to satisfy a series of express conditions, such as that the material, equipment and technology will only be utilised for peaceful purposes that there will be no further transfer to another third party, and that the physical protection of nuclear materials will be assured by a regime conforming to the requirements set out in the co-operative Agreement

Two annexes form part of this Agreement, annex A contains a listing of defined general terms used in the Agreement while annex B contains a listing of defined technical terms

The Agreement which entered into force thirty days after it was signed, will remain in effect for a period of thirty years and will be automatically renewed for successive five-year periods unless terminated by either Party six months prior to the end of any such period

European Commission–Russian Federation and the Ukraine*

Comments on the Provisions of the Two Memoranda Dealing with Nuclear Third-Party Liability (1995)

Improving safety in the nuclear power plants of Central and Eastern Europe is high on the list of priorities of the European Union and led, in the case of Russia and Ukraine, to the adoption of Regulations Nos 2157/91 (of 15 July 1991) and 2053/93 (of 29 July 1993), providing for technical assistance from the Commission

Implementation of the assistance programme was, however, hindered by shortcomings in the legal rules on nuclear liability in the two beneficiary States Neither Russia nor Ukraine are Parties to the international conventions on such liability, and the legal uncertainty in a field involving such serious potential consequences discouraged European suppliers of equipment and services from entering this new market

Following the example of the Agreement concluded between the Russian Federation and the United States in December 1993, the European Commission decided to enter into discussions to settle this delicate matter The Member States and the European nuclear industry were consulted on a regular basis

Negotiations lasting more than a year were needed to reach agreement on the two Memoranda of Understanding one between the Commission and Russia, signed on 27 February 1995, and the other between the Commission and Ukraine, signed on 23 October 1995

In both cases, the principle adopted is that Russia (Article 7) and the Ukraine (Article 6) will compensate the Commission or its contractors for third-party claims brought against them, except in cases of premeditated fault or gross negligence

The wording of the two Memoranda is very similar although the Memorandum signed with Ukraine does offer somewhat increased protection for those involved

Ukraine has waived all rights of recourse as regards matters of contractual liability (Article 6 2), this having been expressly excluded in the Russian Memorandum

The definition of nuclear incident has been developed in the Ukrainian Memorandum (Article 6 3) on the basis of the wording used in the Paris Convention of 29 July 1960 except that "ionising radiations emitted by any [other] source of radiation inside [a nuclear] installation" have not been included as a possible cause of damage

The Memorandum specifies that the provisions on nuclear third party liability and their application are irrevocable until the Vienna Convention is transposed into Ukrainian national law (Article 6 7)

Finally, the protection afforded contractors extends to claims by customers (Article 6 9)

* This note has been kindly prepared by Mr R Tricot of the European Commission

The improvements introduced into the Ukrainian Memorandum notwithstanding, both Memoranda reflect the same pragmatic approach adopted by the Commission to the difficulties of the European nuclear industry Given the limits inherent in this type of document, the first reaction of nuclear operators appears favourable

Euratom–United States*

Agreement for Co-operation in the Peaceful Uses of Nuclear Energy (1996)

The Agreement, signed on 29 March 1996, entered into force on April 12, 1996 by exchange of diplomatic notes between the US Department of State and the European Community The Agreement has a term of thirty years and shall continue in force thereafter for additional periods of five years each Either Party may terminate the Agreement at the end of the initial term or at the end of any subsequent five year period

This new Agreement provides a framework for the sale of nuclear material and equipment between the US and Europe It follows a previous Agreement that provided for a similar framework and which expired on 31 December 1995 after a thirty-five year term

France–Germany

Joint Recommendations on the Safety of Future Nuclear Power Plants (1995)

In a Joint Statement issued on 6 June 1989, the Governments of Germany and France declared their close co-operation in the field of nuclear safety The Governments have entrusted a French-German Steering Committee (DFD) with the task of studying the possible harmonisation of nuclear safety standards in both countries and of establishing a common philosophy with regard to the safety of future nuclear power plants

Prior to this arrangement, the German Reactor Safety Commission (*Reaktor-Sicherheits-Kommission-RSK*) and the *Groupe permanent chargé des reacteurs nucleaires* (GPR) had started to draft safety standards for future nuclear power plants The initial result of this joint undertaking is reflected in a joint Recommendation, dated 25 May 1993 and entitled "GPR/RSK Proposal for a Common Approach to the Safety of Future Pressurised Water Reactors"

On 20 December 1993 the French-German Steering Committee asked RSK and GPR to continue their work, taking into account various proposals which had been made by the nuclear industries of their respective countries

* See *supra* Article Consent Rights in the New Agreement for Co operation in the Peaceful Uses ofo Nuclear Energy Between the United States of America and the European Atomic Energy Community by Mr Lennartz

In June 1995, this work resulted in the issuance of "Joint Recommendations of RSK and GPR on Safety Standards for Future Nuclear Power Plants with Pressurised Water Reactors" These Recommendations, divided into five chapters, address the following issues

- system design and probabilistic safety assessment,
- integrity of the primary circuit,
- external risks,
- radiological consequences of reference and low pressure reactor core meltdown, and
- severe accidents

An English version of these Recommendations is reproduced in *Bundesanzeiger* 1995, No 127, p 7452

Germany–Lithuania

Agreement on Mutual Assistance in the Case of a Disaster (1996)

The Agreement of 15 March 1994 between the Federal Republic of Germany and the Republic of Lithuania on mutual assistance in the case of a disaster or serious accident was ratified by Germany pursuant to the Federal Law of 12 January 1996

The Agreement consists of sixteen articles It covers a broad range of disasters or serious accidents, including nuclear accidents and radiological emergencies Article 4 deals particularly with measures to be taken in situations involving fires, the procedures for providing technical assistance, and specific types of assistance for radiological and chemical hazards

Moreover, the Agreement contains provisions for the supply of cross-border assistance and the costs and compensation for damage suffered

This Agreement will remain in effect for a period of unlimited duration, but may be terminated by either Party upon giving six months notice thereof to the other Party

Germany–United States

Agreement on Co-operation and the Exchange of Information in the Field of Nuclear Safety (1995)

On 19 October 1995, the German Minister of the Environment, Nature Conservation and Reactor Safety and the United States Nuclear Regulatory Commission (USNRC) concluded an Agreement on co-operation and exchange of information in the field of nuclear safety (published in the *Bundesgesetzblatt*, 1996, II, p 259) This Agreement, containing nine articles and two annexes, extends the ongoing co-operation between these two countries which was established by Agreements

made in 1975 and 1981 (See Nuclear Law Bulletin No 28) Its duration will be for a period of five years and it may be extended for a further period Pursuant to Article 9 the Agreement entered into effect upon the date of signature

As set out in Article 2, the Agreement covers all forms of information exchange, including a mutual obligation to provide early notification in the event of a nuclear accident that might affect one of the Parties such as an operational occurrence ranking the second level or higher on the IAEA/INES scale of assessment

Hungary–Slovenia

Agreement on Early Notification of Radiological Emergencies (1995)

This Agreement, signed 15 July 1995 between the Government of Slovenia and that of the Republic of Hungary, provides for early notification and for the exchange of information in cases of radiological emergency

The purpose of the Agreement, however, is not limited only to early notification of radiological emergencies It also calls for the promotion of co-operation between the two Parties on other matters such as

- the exchange of information concerning nuclear programmes as well as national legislation in the nuclear field,
- the exchange of test results on radioactivity levels in the environment, and
- technical consultations, as required, on a bi-annual basis

This Agreement was ratified by Slovenia on 26 January 1996 and was published in the *Official Gazette* No 2/96 on 12 February 1996

Russian Federation–United States

Agreement on the Exchange of Technical Information in the Field of Warhead Safety and Security (1995)

This Agreement entered into force in June 1995 and provides for the exchange of information in the following areas

- safety enhancement technology related to nuclear weapons and materials during dismantlement of weapons,
- safety enhancement technology, storage, and physical safeguards for nuclear weapons and

- developing criteria for limiting the open publication of information on the design of nuclear weapons

Information exchanges will focus on the improvement of computational methods for accident analysis and risk assessment, as well as other issues related to the safety and security of nuclear warheads during dismantlement

Annexes to the 1993 Agreement Concerning Highly Enriched Uranium Extracted from Nuclear Weapons (1996)

A key element of this Agreement, which entered into force on February 18, 1993 (see Nuclear Law Bulletin No 51), is that transparency measures be established to ensure that the objectives of the Agreement are met, namely, that the low enriched uranium provided by the Russian Federation to the United States is obtained from highly enriched uranium recovered from nuclear weapons, and that the low enriched uranium received by the United States from the Russian Federation shall be fabricated into fuel for commercial nuclear reactors

The highly enriched uranium transparency implementing annexes have been recently completed Two were signed in Washington, D C in July 1995, the remaining annexes were signed in Vienna in April 1996 The completion of the annexes was announced at the Nuclear Safety and Security Summit in Moscow on April 19-20, 1996

South Africa–United States

Co-operative Agreement Concerning Peaceful Uses of Nuclear Energy (1995)

This Agreement signed on 25 August 1995 provides a comprehensive framework for peaceful nuclear co-operation between the United States and South Africa while reflecting a strong commitment to nuclear non-proliferation Its entry into force is scheduled for the near future

The Agreement replaces the co-operative Agreement which entered into force on 22 August 1957 and which was due to expire on 22 August 2007 Co-operation under this earlier Agreement had been suspended by the United States during the 1970's Furthermore, following the passage of the 1978 Nuclear Non-Proliferation Act in the United States, South Africa did not satisfy one of the provisions of the US Atomic Energy Act that requires full-scale IAEA safeguards in non-nuclear-weapons States as a condition for continued US nuclear exports

However, in July 1991, South Africa acceded to the Non-Proliferation Treaty (NPT) and entered into a full-scope safeguards agreement with the IAEA as called for by the NPT Since that date, the US has noted that South Africa has taken a significant number of non-proliferation steps, sufficient to demonstrate its commitment to conducting its nuclear programme for peaceful purposes

The new Agreement allows for the transfer of nuclear material, equipment (including reactors) and technology as well as components for nuclear research and nuclear power production Restricted data and sensitive nuclear technology may not be transferred under the Agreement, nor may sensitive nuclear facilities or major critical components of such facilities

Each Party is to maintain adequate physical protection measures for all equipment and material subject to the Agreement Each Party also guarantees that no material, equipment or components subject to the Agreement will be used for any nuclear explosive device or for any military purpose

The Agreement has a term of twenty-five years which may be extended by agreement of the Parties

MULTILATERAL AGREEMENTS

Regional Agreement to Facilitate the Transport of Dangerous Goods Between Brazil, Argentina, Paraguay and Uruguay (1994)

This Agreement, signed on 30 December 1994 (ratified by Brazil pursuant to Decree No 1 797 of 25 January 1996), governs the transport of dangerous goods, including radioactive waste, between the States Party to MERCOSUL It's scope of application covers all dangerous goods in classes 1 to 7 as listed in an annex to the Agreement According to the terms of Article 2 the transport of dangerous goods is further governed by those specific rules which have been set forth by the competent national authorities of each State Party to the Agreement In addition, the Parties have reserved the right to prohibit the import into their territories of all dangerous goods by means of prior notification to the exporting State

The Agreement provides that each shipment of dangerous goods must be carried in conformity with the provisions established by the International Maritime Organisation (IMO) and by the International Civil Aviation Organisation (ICAO) As regards the technical means of transport the Agreement provides that packing must be done in such a manner as to conform to the United Nations Recommendations on the Transport of Dangerous Goods as well as to national requirements relating thereto Detailed information on the nature of the materials transported as well as on remedial measures to be taken in case of an emergency are also required

Finally, the Parties have provided for the creation of a commission of specialists who are to meet every two years for the purpose of reviewing, revising and bringing up to date the two annexes to the Agreement It is also contemplated that one of the States Party to the Agreement will assume the role of co-ordinator of this commission

Memorandum of Understanding on the Closure of Chernobyl Nuclear Power Plant (1995)

On 20 December 1995, a Memorandum of Understanding on the implementation of a comprehensive programme to close the Chernobyl Nuclear Power Plant was signed in Ottawa Canada by the Government of Ukraine, the Governments of the G-7 countries (Canada, France Germany Japan Italy, the United Kingdom and the United States) and the Commission of the European Communities * This Memorandum of Understanding supports the decision taken by the President of Ukraine earlier in the year to close the plant by the year 2000, and as well, the commitments made by the leaders of the G-7 countries in 1994 and again in 1995

* The text of this Memorandum is reproduced in the 'Texts of this issue of the Bulletin

The comprehensive programme contemplates that the G-7 countries and Ukraine will work closely together to mobilise international and domestic financing in support of appropriate nuclear safety and energy investment projects As a guiding principle, revenue generating projects would be considered for international loan financing, while non-revenue generating projects, directly related to the closure of the Chernobyl Nuclear Power Plant would be considered for international grant financing In both cases, Ukrainian domestic resources would be taken into account as possible additional financing sources The total amount of foreign aid to be provided to Ukraine is currently contemplated at approximately (US)$2 3 billion, of which just under $500 million consists of grants already committed and $1 809 billion comprises international and Euratom Loan financing not all of which has yet been approved

Priority projects include a restructuring of the power sector in Ukraine, transformation of the "shelter" over Chernobyl - 4 into a safe building, Chernobyl - 3 improvements, a social impact plan and a decommissioning plan They also include completion of other existing nuclear power plants, construction of high-voltage transmission lines rehabilitation of thermal power plants and promotion of energy efficiency

It is recognised that the closure of Chernobyl will be an important step towards improving nuclear safety, not only in Central and Eastern Europe, but throughout the whole world

Treaty on the Southeast Asia Nuclear Weapon-Free Zone (1995)

On 15 December 1995, at the 5th Summit Meeting of the Association of South East Asian Nations (ASEAN) in Bangkok, Thailand, the Treaty on the Southeast Asia Nuclear Weapon-Free Zone was opened to signature and signed by the following member nations Brunei, Indonesia, Malaysia, the Philippines, Singapore, Thailand and Vietnam At a later stage, it was also signed by Cambodia, Laos and Myanmar

The basic objectives of the Treaty are to establish a Nuclear Weapon-Free Zone for the purpose of strengthening the security of States within the Zone and maintaining peace and stability Furthermore, the Treaty aims to protect the region from environmental pollution and the hazards posed by radioactive wastes and other radioactive material

These objectives are reflected in the basic undertakings set out in Article 3 of the Treaty to which the Parties have committed These include undertakings

- not to develop, manufacture, acquire, possess, transport, test or use nuclear weapons anywhere inside or outside the Zone,
- not to allow any other State to carry out such activities in the territory of a State Party,
- not to dump at sea or discharge into the atmosphere anywhere within the Zone any radioactive material or wastes,
- not to allow, within its territory, any other State to carry out such activities,
- not to dispose of radioactive material or wastes on land in the territory of other States except under specified conditions by this Treaty, and

– not to seek or receive any assistance or assist others in a violation of the above undertakings

In addition, each State Party, to the extent it has not already done so, shall conclude a full scope safeguards agreement with the IAEA with respect to its peaceful nuclear activities not later than eighteen months after the entry into force for that State Party of this Treaty (Article 5) The Parties shall also endeavour to accede to the 1986 Convention on Early Notification of a Nuclear Accident

The Treaty is to remain in force indefinitely A Protocol to the Treaty which is also to remain in force indefinitely, permits signatories thereto to undertake to respect the Treaty not to contribute to any act which constitutes a violation of the Treaty, and not to use or threaten to use nuclear weapons against any State Party to the Treaty or within the Zone It is open for signature by the People s Republic of China, the French Republic, the Russian Federation, the United Kingdom of Great Britain and Northern Ireland and the United States of America.

Treaty Declaring Africa a Nuclear-Weapon-Free Zone (Treaty of Pelindaba) (1995)

On 23 June 1995 the Council of Ministers of the Organisation of African Unity (OAU) adopted the Treaty on an African Nuclear-Weapon-Free Zone The Treaty was subsequently approved by the OAU Assembly of Heads of State and Governments and transmitted to the United Nations (UN) Secretary General The resolution A/RES/50/78 adopted by the UN General Assembly on 11 January 1996 invites the African States to sign and ratify the Treaty as soon as possible

The Treaty, which is to remain in force indefinitely, defines the African nuclear-weapon-free zone, (the Zone) as "the territory of the continent of Africa, island States members of the OAU and all islands considered by the OAU in its resolutions to be part of Africa" It is to enter into force on the date of deposit of the twenty-eighth instrument of ratification

The Parties to the Treaty undertake

– to refrain from carrying out research, development, manufacturing, stockpiling, acquisition possession or control of any nuclear explosive device, and from seeking, receiving or providing assistance with respect to such activities,

– to prohibit the stationing or testing on their territory of any nuclear explosive device,

– to declare any capability for the manufacture of nuclear explosive devices, to dismantle and destroy any nuclear explosive device made before the coming into force of the Treaty to destroy facilities for the manufacture of nuclear explosive devices or to convert them to peaceful uses,

– to permit the IAEA and the Africa Commission on Nuclear Energy, which is established under Article 12 of the Treaty, to verify the processes of dismantling and destruction of devices and destruction or conversion of facilities referred to above, and

– to implement the measures contained in the 1991 Bamako Convention as they relate to radioactive waste and to refrain from assisting the dumping of radioactive wastes and other matter in the Zone

- to promote the use of nuclear science and technology for economic and social development and to establish and strengthen co-operative mechanisms at the bilateral, subregional and regional levels for this purpose,

- to conduct all peaceful nuclear energy activities under strict non-proliferation measures, to conclude a comprehensive safeguards agreement with the IAEA to verify compliance with such measures, and

- to refrain from providing special fissionable material or equipment or material specially designed for the processing, use or production of such material to any non-nuclear-weapon State unless subject to a comprehensive safeguards agreement concluded with the IAEA

With respect to the physical protection of nuclear materials, facilities and equipment, each Party undertakes

- to maintain the highest standards of security and physical protection of nuclear materials, facilities and equipment in order to prevent the theft or unauthorised use and handling of facilities and equipment, and

- to refuse participation in any action aimed at an armed attack by conventional or other means against nuclear installations in the Zone

There are, in addition, three Protocols to the Treaty, two of which are open for signature by China, France, the Russian Federation, the United Kingdom of Great Britain and Northern Ireland and the United States of America The first deals with undertakings not to use nuclear explosive devices and the second generally is designed to avoid the testing of nuclear explosive devices The third Protocol, which is open for signature by France and Spain only, requires the application of all major provisions of the Treaty (including the safeguards provisions contained in the Annex), in respect of those territories within the Zone for which the signatory is internationally responsible

Convention to Ban the Importation into Forum Island Countries of Hazardous and Radioactive Wastes and to Control the Transboundary Movement and Management of Hazardous Wastes within the South Pacific Region (the Waigani Convention) (1995)

The Waigani Convention was adopted in Waigani (Port Moresby, Papua New Guinea) on 16 September 1995, and was signed by fourteen of the sixteen South Pacific Forum members These fourteen countries are Australia, Cook Islands, Fiji, Kiribati, the Federated States of Micronesia, Nauru, Niue (Nive Islands), New Zealand Papua New Guinea, Solomon Islands, Western Samoa, Tonga, Tuvalu, and Vanuatu The only Forum countries which have not yet signed this Convention are The Republic of the Marshall Islands and Palua

In accordance with Article 4 of the Convention, each Party is obliged to take appropriate measures to prohibit any importation of hazardous and radioactive wastes from outside the zone covered by the Convention (the Convention Area) Similar measures are to be put into place to prohibit the export of these same wastes to Contracting States or to territories located in the zone covered by the Convention, with the exceptions of Australia and New Zealand However, transboundary movement of such wastes within the zone covered by the Convention is authorised, provided that the procedures set out in Article 6 are followed The movement of such wastes in a

provided that the procedures set out in Article 6 are followed The movement of such wastes in a manner not conforming to the provisions of the Convention is considered as illicit trading and is judged to be a criminal act

The Parties also commit to prohibiting all dumping of hazardous or radioactive wastes at sea in conformity with existing international instruments on this subject They have equally committed to the implementation of the 1990 IAEA Code of Practice on the International Transboundary Movement of Radioactive Wastes

It is also contemplated that a fund will be created to provide assistance to countries encountering emergency situations for the purpose of controlling and reducing the effects of accidental releases from the transportation or disposal of such hazardous wastes occurring within the zone covered by the Convention

In case of disagreement as to the application or interpretation of the Convention, the Parties may resort to informal means of dispute resolution, failing which recourse is to be had either to arbitration or to the International Court of Justice The Convention will enter into force thirty days after the date of deposit of the tenth instrument of ratification, acceptance, approval or accession

Status of the Convention on Nuclear Safety (1996)

Since November 1995 (See Nuclear Law Bulletin No 56), six new States have become Parties to the 1994 Nuclear Safety Convention Canada, China, Croatia, Finland, Hungary and the United Kingdom At present, nineteen countries are Parties to the Convention Moreover, Romania which ratified the Convention on 1 June 1995, from now on belongs to the group of countries having at least one nuclear installation which has achieved criticality in a reactor core, bringing to thirteen the number of States in this category

It may be recalled that the present Convention will enter into force on the ninetieth day after the date of deposit of the twenty-second instrument of ratification acceptance or approval including the instruments of seventeen States, each having at least one nuclear installation which has achieved criticality in a reactor core

Ratification of Protocols Relating to the South Pacific Nuclear Free Zone Treaty (Treaty of Rarotonga) (1996)

On 25 March 1996 in Suva (capital of the Fiji Islands), France, the United Kingdom and the United States each signed Protocols I, II, and III to the Treaty of Rarotonga of 1985 (See Nuclear Law Bulletin Nos 36, 39 and 41) This Treaty, which entered into force on 11 December 1986, creates a zone in which the manufacture, acquisition and stationing of nuclear weapons is prohibited Pursuant to the first Protocol, France, the United States and the United Kingdom are to apply the Treaty in those territories within the zone which are under their control Under the second Protocol the five countries officially recognised as nuclear weapons States are not to use or threaten to use such weapons against any of the Contracting Parties By virtue of the third Protocol these same five States are to refrain from testing any nuclear explosive device anywhere within the zone

As of March 1996, all countries of the South Pacific Forum had ratified the Treaty except for the Federated States of Micronesia, the Marshall Islands Republic, Palau and Tonga China and Russia signed and ratified Protocols II and III in the 1980's, Protocol I not being applicable to those States

Euratom-United States

Extracts of The Agreement for Cooperation in the Peaceful Uses of Nuclear Energy Between the European Atomic Energy Community and the United States of America (29 March 1996)

Article 1 Scope of Cooperation

1 The Parties may co-operate in the peaceful uses of nuclear energy in the following areas

A) Nuclear fission research and development on such terms as may be agreed between the Parties,

B) Nuclear safety matters of mutual interest and competence, as set out in Article 2,

C) Facilitation of exchange and cooperation activities at an industrial or commercial scale between persons and undertakings,

D) Subject to the provisions of this Agreement, supply between the Parties of non-nuclear material, nuclear material and equipment and provision of nuclear fuel cycle services, whether for use by or for the benefit of the Parties or third countries,

E) Exchange of information on major international questions related to nuclear energy, such as promotion of development in the field of international nuclear safeguards and non-proliferation within areas of mutual interest and competence, including collaboration with the IAEA on safeguards matters and on the interaction between nuclear energy and the environment,

F) Controlled thermonuclear fusion including multilateral projects,

G) Other areas of mutual interest

2 The cooperation referred to in this Article, as between the Parties, may also take place between persons and undertakings established in the respective territories of the Parties

Article 3 Industrial and Commercial Cooperation

In conformity with the provisions of Article IV of the Non-Proliferation Treaty, the Parties undertake to facilitate the fullest possible exchange of equipment, materials and scientific and technological information for the peaceful uses of nuclear energy To this end, the Parties will facilitate, as appropriate, commercial relations between persons and undertakings involving nuclear cooperation

Such cooperation may include, but is not limited to

- investments,
- joint ventures,

– environmental aspects at industrial or commercial scale,

– trade in nuclear items, non-nuclear material and technical and specialised services as specified in Article 4, and

– licensing arrangements between persons and undertakings in the territory of either Party

Article 4 Nuclear Trade

1 The Parties shall facilitate nuclear trade between themselves, in the mutual interests of industry, utilities and consumers and also, where appropriate, trade between third countries and either Party of items obligated to the other Party

2 Authorizations, including export and import licences as well as authorizations or consents to third parties, relating to trade, industrial operations or nuclear material movements on the territories of the Parties shall not be used to restrict trade The relevant authority shall act upon applications for such authorizations as soon as possible after submission and without unreasonable expense Appropriate administrative procedures shall be in place to ensure respect of this provision

Article 8 Nuclear Fuel Cycle Activities

1 The nuclear fuel cycle activities carried out pursuant to this Agreement include

(A) 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 Enrichment of such uranium to more than twenty percent in the isotope 235 and re-enrichment of such uranium already enriched to more than twenty percent in the isotope 235 may be carried out according to conditions agreed upon in writing which shall be the subject of consultations between the Parties within 40 days of the receipt of a request from either Party

(B) 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

(C) Retransfer to third countries according to procedures set out in the Agreed Minute of

(i) low enriched uranium, non-nuclear material, equipment and source material transferred pursuant to this Agreement or of low enriched uranium produced through the use of nuclear material or equipment transferred pursuant to this Agreement, for nuclear fuel cycle activities other than the production of high enriched uranium

(ii) 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 transferred pursuant to this Agreement, for storage or disposal not involving reprocessing,

(iii) other nuclear material transferred pursuant to this Agreement and other special fissionable material produced through the use of non-nuclear material, nuclear material or equipment

transferred pursuant to this Agreement, for other fuel cycle activities including those specified in paragraphs 2 and 3 of this Article

(D) 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

(E) Conditioning, storage and final disposal of irradiated materials transferred pursuant to this Agreement or used in or produced through the use of non-nuclear material, nuclear material and equipment transferred pursuant to this Agreement

2 The following nuclear fuel cycle activities may be carried out pursuant to this Agreement within the territorial jurisdiction of either Party in facilities forming part of the delineated peaceful nuclear programmes described in Annex A

A) Reprocessing of nuclear material transferred pursuant to this Agreement and nuclear material used in or produced through the use of non-nuclear material, nuclear material or equipment so transferred,

B) Alteration in form or content of plutonium, uranium 233 and high enriched uranium transferred pursuant to this Agreement or used in or produced through the use of non-nuclear material, nuclear material or equipment so transferred,

3 The following nuclear materials

(i) plutonium, uranium-233 and high enriched uranium, if not contained in irradiated nuclear fuel, transferred pursuant to this Agreement,

(ii) plutonium, uranium-233 and high enriched uranium recovered from nuclear material transferred pursuant to this Agreement,

(iii) plutonium, uranium-233 and high enriched uranium recovered from nuclear material used in equipment transferred pursuant to this Agreement

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 Annex C to IAEA document INFCIRC 254/REV 1/Part 1 (Guidelines for nuclear transfers) as it may be revised and accepted by the Parties and the Member States of the Community

Each Party shall record its 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 corrective measures are taken immediately Such measures shall be sufficient to restore the

levels of physical protection referred to above at the facility in question If this proves not to be feasible, the nuclear material in question shall be transferred for storage at another appropriate listed facility

Article 12 Consultation and Arbitration

1 The Parties shall consult at the request of either of them to promote cooperation under this Agreement and to ensure its effective implementation A Joint Committee shall be established for these purposes This Committee will also consult on nuclear questions of mutual interest and any other significant matters relating to the cooperation envisaged by this Agreement A Joint Technical Working Group reporting to the Joint Committee will be set up to ensure the fulfilment of the requirements of the Administrative Arrangement referred to in Article 16

2 The Parties shall consult, at the request of either of them, on any question arising out of the interpretation or application of this Agreement.

3 Any dispute arising out of the interpretation or application of this Agreement shall be settled by negotiation, mediation, conciliation or other similar procedure or, if both Parties agree by submission to an arbitral tribunal which shall be composed of three arbitrators appointed in accordance with the provisions of this paragraph Each Party shall designate one arbitrator and the two arbitrators so designated shall elect a third, a national of a country other than the United States of America or a Member State of the Community, who shall be the Chairman If within thirty days of the request for arbitration, a Party has not designated an arbitrator, the other Party may request the President of the International Court of Justice to appoint an arbitrator The same procedure shall apply if, within thirty days of the designation or appointment of the second arbitrator the third arbitrator has not been elected, provided that the third arbitrator so appointed shall not be a national of the United States of America or of a Member State of the Community All decisions shall require the concurrence of two arbitrators The arbitral procedure shall be fixed by the tribunal The decisions of the tribunal shall be binding on the Parties

Article 14 Duration and Amendment

2 This Agreement shall remain in force for a period of thirty years and shall continue in force thereafter for additional periods of five years each Either Party may by giving six months written notice to the other Party, terminate this Agreement at the end of the initial thirty year period or at the end of any subsequent five year period

Article 18 Status of Annexes

The Annexes form an integral part of this Agreement and, unless expressly provided otherwise a reference to this Agreement includes its Annexes

Extracts of the Agreed Minute to the Cooperation Agreement Between the European Atomic Energy Community and the United States of America

B Nuclear Fuel Cycle Activities

2 Upon entry into force of this Agreement, the Parties shall exchange lists of third countries to which retransfers pursuant to Article 8 1(C)(i) may be made by the other Party Eligibility for continued inclusion on such lists shall be based, as a minimum, upon satisfaction of the following criteria

- third countries must have made effective non-proliferation commitments, normally by being party to, and in full respect of their obligations under the Non-Proliferation Treaty or the Treaty of Tlatelolco and by being in compliance with the conditions of INFCIRC/254/REV 1/Part 1, and

- in case of retransfer of items obligated to the United States from the territory of the Member States of the Community, third countries must be party to a nuclear cooperation agreement with the United States

3 Should retransfers pursuant to Article 8 1(C)(ii) and (iii) be requested in the future by a Party, a list of third countries to which such retransfers may be made, shall be provided by the other Party In this connection, the Parties shall take into account the following additional criteria

- consistency of the proposed action with the guidelines contained in IAEA document INFCIRC/225/REV 3 and with the provisions of IAEA document INFCIRC/274/REV 1, as they may be revised and accepted by the Parties and the Member States,

- the nature and content of the peaceful nuclear programmes of the third country in question,

- the potential proliferation and security implications of the transfer for either Party or a Member State of the Community

4 Either Party may add eligible third countries to its lists at any time Either Party may delete third countries from its lists following consultations with the other Party Neither Party shall delete third countries from its lists for the purpose of obtaining commercial advantage or of delaying, hampering or hindering the peaceful nuclear programmes of the other Party or its peaceful nuclear cooperation with third countries The Parties will cooperate in efforts to obtain as soon as possible on a generic basis a confirmation from the third countries on the lists that any retransferred items will be subject to any agreement for cooperation in force between the receiving country and the non-retransferring Party The receipt of such confirmation shall not constitute a pre-condition for the addition of a third country to the lists

Retransfers to third countries not included on the lists may be considered on a case by case basis

5 The Parties agree that, notwithstanding the provisions of paragraphs 2, 3 and 4, the provisions set out in the Exchange of Notes dated 18 July 1988 between the Commission of the European Communities and the United States Mission to the European Communities concerning the Agreement for Cooperation in the Peaceful Uses of Nuclear Energy between the United States of America and Japan shall remain in effect as long as this Agreement remains in force The Parties confirm that the above mentioned provisions shall apply, inter alia, to plutonium contained in mixed oxide fuel The consents granted therein may be suspended only if an event of the same or greater degree of seriousness as those referred to in paragraph 8 arises which directly threatens either the retransfer or the activities involving the retransferred plutonium in Japan

6 With reference to paragraph 2 of Article 8 of the Agreement and notwithstanding paragraph 6 of Article 14, either Party, acting through its appropriate authorities, may make changes to the peaceful nuclear programmes it has delineated by notifying the other Party in writing in accordance with the procedures set forth below and receiving a written acknowledgment

7 Such acknowledgment 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 Intended changes in delineated programmes shall receive the fullest possible consideration during consultations under the Agreement, which may include an exchange of information and views on safeguards matters of mutual interest

(A) For an addition of a facility within its territorial jurisdiction to the peaceful nuclear programme delineated by the Community, the notification shall contain

(i) the name, type and location of the facility and its existing or planned capacity,

(ii) a confirmation that the Euratom Safeguards Regulation 3227/76, as amended is fully applied,

(iii) for a facility to be under IAEA safeguards inspections pursuant to a safeguards agreement referred to in paragraph 1(A), (B) or (C) of Article 6, a confirmation that relevant safeguards arrangements have been agreed upon with the IAEA and that those arrangements will permit the IAEA to exercise fully its rights pursuant to the aforementioned safeguards agreements, in the light of how these agreements are implemented during the life of this Agreement and so as to enable the IAEA to meet its objectives and inspection goal,

(iv) such non-confidential information as is available to the Community on the IAEA safeguards approach and non-confidential information on Euratom safeguards relevant to the facility,

(v) a confirmation that physical protection measures as required by Article 11 of this Agreement will be applied.

(B) For an addition of a facility within its territorial jurisdiction to the delineated peaceful nuclear programme of the United States, the notification shall contain

(i) the name, type and location of the facility and its existing or planned capacity

(ii) for facilities licensed or certified by the United States Nuclear Regulatory Commission a confirmation that the Fundamental Nuclear Material Control Plan describing how the requirements of the US Code of Federal Regulations, Title 10, Part 74 as amended will be met, has been approved for the facility, for United States Department of Energy civil facilities, a confirmation that the facility is in compliance with the requirements of the Department of Energy Order 5633 3B, "Control and Accountability of Nuclear Materials and associated guides, as amended,

(iii) for a facility to be under IAEA safeguards inspections pursuant to the safeguards agreement referred to in paragraph 1(D) of Article 6, a confirmation that the relevant safeguards arrangements have been agreed upon with the IAEA and that those arrangements will permit the IAEA to exercise fully its rights pursuant to the aforementioned safeguards agreement, in the light of how this agreement is implemented during the life of this Agreement and so as to enable the IAEA to meet its objectives and inspection goal,

(iv) information on the basic features contained in the Fundamental Nuclear Material Control Plan or the compliance with the Department of Energy Order referred to above, and such non-confidential information as is available to the United States on the IAEA safeguards approach, and

(v) a confirmation that physical protection measures as required by Article 11 of this Agreement will be applied

(C) Either Party may delete a facility from the peaceful nuclear programme it has delineated, by providing to the other Party a notification containing the facility name and other relevant information available

8 A The activities referred to in paragraph 2 of Article 8 of this Agreement may proceed as long as those provisions continue in effect with respect to the peaceful nuclear programme delineated by a Party, unless the other Party considers, pursuant to the procedures set out below, that these activities should be suspended on the basis of objective evidence that their continuation would entail a serious threat to the security of either Party or of a Member State of the Community, or a significant increase in the risk of nuclear proliferation, resulting from a situation of the same or greater degree of seriousness as the following

(a) With regard to the Community

(i) a non-nuclear-weapon State member of the Community detonates a nuclear weapon or any other nuclear explosive device,

(ii) a nuclear-weapon State member of the Community detonates a nuclear weapon or any other nuclear explosive device using any item subject to this Agreement,

(iii) a Member State of the Community or the Community, as relevant, materially violates, terminates, or declares itself not to be bound by, the Non-Proliferation Treaty or the relevant safeguards agreements referred to in Article 6 1, or the Guidelines applicable to the transfers of nuclear items laid down in document INFCIRC/254/REV 1/Part 1, as it may be revised and accepted by the Parties,

(iv) a Member State of the Community retransfers an item subject to this Agreement to a non-nuclear-weapon State which has not concluded a full-scope safeguards Agreement with the IAEA,

(v) a Member State of the Community is subjected to measures taken by the Board of Governors of the IAEA, pursuant to Article 19 of the relevant safeguards Agreement referred to in Article 6 1(A), (B) or (C),

(vi) acts of war or serious internal disturbances preventing the maintenance of law and order, or serious international tension constituting a threat of war, that threaten severely and directly the safeguarding or physical protection of such activities

(b) With regard to the United States

(i) the United States detonates a nuclear weapon or any other nuclear explosive device using any item subject to this Agreement,

(ii) the United States materially violates, terminates or declares itself not to be bound by the Non-Proliferation Treaty or the relevant safeguards agreement referred to in Article 6 1 (D) or the Guidelines applicable to the transfers of nuclear items laid down in document INFCIRC/254/REV 1/Part 1, as it may be revised and accepted by the Parties,

(iii) the United States retransfers an item subject to this Agreement to a non-nuclear-weapon State which has not concluded a full-scope safeguards agreement with the IAEA

(iv) the United States is subjected to measures taken by the Board of Governors of the IAEA pursuant to Article 193 of the safeguards Agreement referred in Article 6 1(D)

(v) acts of war or serious internal disturbances preventing the maintenance of law and order or serious international tension constituting a threat of war that threaten severely and directly the safeguarding or physical protection of such activities

B The Party considering that such objective evidence may exist, shall consult with the other Party, at Cabinet level for the United States and at European Commission level for the Community, before reaching any decision

C Any such decision that such objective evidence does exist and that activities referred to in paragraph 2 of Article 8 should therefore be suspended, shall be taken only by the President of the United States or by the Council of the European Union, as the case may be and shall be notified in writing to the other Party

D Any decision taken by a Party pursuant to this paragraph shall apply to the activities of the other Party referred to in Article 8, paragraph 2 of this Agreement taken as a whole

E The Parties confirm that, as of the time of entry into force of this Agreement there exists no objective evidence of any of the threats referred to above and that they do not foresee any such threats developing in the future

9 Actions of governments of third countries or events beyond the territorial jurisdiction of either Party shall not be used as a basis for invoking the provisions of paragraph 8 with respect to activities or facility operations within that Party's territorial jurisdiction unless, due to such actions or events those activities or facility operations would clearly result in a significant increase in the risk of nuclear proliferation or in a serious threat to the security of the Party invoking the provisions of paragraph 8

10 The Party invoking the provisions of paragraph 8 shall keep under constant review the development of the situation which prompted the decision and shall withdraw its invocation as soon as warranted

11 The provisions of paragraph 8 shall not be invoked due to differences over the nature of the Parties' peaceful nuclear programmes or fuel cycle choices or for the purpose of obtaining commercial advantage, or of delaying, hampering or hindering the peaceful nuclear programmes or activities of the other Party, or its peaceful nuclear cooperation with third countries

12 Any decision to invoke the provisions of paragraph 8 shall only be taken in the most extreme circumstances of exceptional concern from a non-proliferation or security point of view and shall be applied for the minimum period of time necessary to deal in a manner acceptable to the Parties with the exceptional case

13 Should the activities agreed upon in paragraph 2 of Article 8 of the Agreement be suspended, as provided in paragraph 8, quantities of nuclear material equivalent to the inventory described in Article 20 1 shall, at the option of the Party against which the suspension is applied, be regarded during such suspension as subject to this Agreement but only to the extent covered by the agreements referred to in Article 19

E Suspension and Termination

17 No violation may be considered as being material unless corresponding to the definition of material violation or breach contained in the Vienna Convention on the Law of Treaties

Ukraine-G-7 Countries-Commission of the European Communities

Memorandum of Understanding Between the Government of Ukraine and the Governments of the G-7 Countries and the Commission of the European Communities on the Closure of the Chernobyl Nuclear Power Plant (1995)*

THE GOVERNMENT OF UKRAINE, hereinafter referred to as "Ukraine", and THE RESPECTIVE GOVERNMENTS OF THE G-7 COUNTRIES AND THE COMMISSION OF THE EUROPEAN COMMUNITIES, hereinafter referred to as "the G-7", have developed a cooperative-operative approach on the elaboration and implementation of a Comprehensive Program to support the decision of Ukraine to close the Chernobyl Nuclear Power Plant by the year 2000, as formulated by President Kuchma in his statement of April 13, 1995, and in his letter of August 8, 1995, to G-7 Leaders The Program will thus implement the commitments of the leaders of the G-7, made in Naples, Italy, in 1994 and Halifax, Canada, in 1995

The program is guided by the following principles

- The friendly relationships among Ukraine and members of the G-7,
- The critical linkages between energy sector reform and the achievement of Ukraine's economic and social reform objectives,
- The complementarity between measures summarized herein to support the closure of the Chernobyl Nuclear Power Plant and the development of a long term energy sector strategy in Ukraine, taking into account sound economic, financial and environmental criteria, and leading to an efficient sustainable, market-oriented energy sector well-suited to Ukraine's needs,
- The necessity of the continuous promotion of a high level of nuclear safety around the world, taking into account the principles specified in the International Convention on Nuclear Safety

* The official languages of this text are English and Ukrainian

and the recognition of the essential role played in this regard by a strong and independent national nuclear safety regulator;

- The need to mobilize financial resources from the international community and domestic sources to support the decision of Ukraine to close the Chernobyl Nuclear Power Plant

- The need to ensure full co-operation from the Ukrainian entities associated with all elements of the comprehensive program

- The recognition that the early closure of the Chernobyl Nuclear Power Plant will have adverse economic and social implications for Ukraine while also facilitating the flow of international financial resources and improving the national standards of nuclear safety

- The recognition of the fact that the responsibility for nuclear safety rests exclusively with the operating state, including an effective regime for liability for nuclear damage corresponding to accepted international norms

- The desirability of increasing energy efficiency

- The importance of our joint commitment to take all necessary measures for the decommissioning of the Chernobyl Nuclear Power Plant in the shortest, practically achievable time

Ukraine and the G-7 have decided upon the following Comprehensive Program of cooperation in order to support the closure of the Chernobyl Nuclear Power Plant by the year 2000

I Power Sector Restructuring

1 Ukraine and the G-7 will continue to cooperate in the development of a financially-sound electric power market with market-based pricing that will encourage energy efficiency and conservation and will work cooperatively in generating and attracting the domestic and international resources needed both for safety measures and for new capital investment in power generation transmission and distribution

II Energy Investment Program

2 Ukraine and the G-7 will work with the international financial institutions as well as foreign and domestic investors to prepare loan-financed projects based upon least-cost planning principles for completion of Khmelnitsky II and Rovno IV nuclear reactors, for thermal and hydro plant rehabilitation and pumped storage projects, and for energy efficiency projects in accordance with Ukraine's energy sector strategy In order to support the closure of the Chernobyl Nuclear Power Plant, the investment program will identify least-cost power supply investments to meet Ukraine s future national power requirements in the context of a competitive market-based power sector

III Nuclear Safety

3 Ukraine and the G-7 will work with the relevant international organizations as well as multilateral and bilateral donors on an expedited basis to prepare and implement projects for short term safety upgrades at Chernobyl III and for decommissioning of the Chernobyl Nuclear Power Plant

4 Ukraine and the G-7 will continue to cooperate in the development of a cost effective and environmentally sound approach to the shelter for Chernobyl IV, including the definition, as soon as possible, of technical and cost options as the basis for reviewing financial requirements

IV Social Impact Plan

5 Ukraine and the G-7 recognize the implications of the closure of the Chernobyl plant for the workers and their families The European Commission and the Government of the United States will assist the Government of Ukraine to develop an Action Plan for addressing the social impacts of the closure of Chernobyl

V Financial Resources

6 To provide for the implementation of the program outlined in paragraphs 1-5, Ukraine and the G-7 will cooperate in the identification of international and domestic Ukrainian funding sources and the mobilization of international finance in support of appropriate program activities

7 Attachment 1 presents a summary of the current financial resources either available or under consideration from the G-7 and international financial institutions Some elements are subject to the completion of project specific feasibility studies Attachment 2 provides the list of priority projects of the Comprehensive Programme

8 As a guiding principle, revenue generating projects would be considered for international loan financing and Ukrainian domestic resources Non-revenue generating projects, directly related to the closure of the Chernobyl Nuclear Power Plant, would be considered for international grant financing and, taking into account the financial and economic situation in Ukraine, Ukrainian domestic resources

VI Implementation Review

9 Representatives of Ukraine, the G-7, and the international financial institutions will meet at least annually to monitor implementation of the comprehensive program for the closure of the Chernobyl Nuclear Power Plant and consider any technical or financial issues that represent potential obstacles to realising its objectives

Done in Ottawa, this 20th day of December 1995, in duplicate, in the English and Ukrainian languages, each text being equally valid

G-7 Countries-Russian Federation

Moscow Nuclear Safety and Security Summit Declaration (1996)*

1 The end of the cold war and the political and economic reforms in Russia have opened a new era in our relationship and have provided the international community with real possibilities for cooperation in the fields of nuclear safety and security The Moscow meeting is an important step in

* The present Declaration was made by the G-7 and the Russian Federation on the occasion of the 19 20 April Summit on Nuclear Safety and Security in Moscow

the realization of these objectives We are determined, at this summit and beyond to work together to ensure the safety of nuclear power and to promote greater security for nuclear materials

2 We are committed to give an absolute priority to safety in the use of nuclear energy As we approach the tenth anniversary of the Chernobyl accident, it is our shared objective that such a catastrophe cannot reoccur

We are ready to cooperate among ourselves so that the use of nuclear energy is conducted all over the world consistently with fundamental principles of nuclear safety Further, we are committed to measures which will enable nuclear power, already a significant contributor to electricity supply in those countries choosing to exploit it, to continue in the next century to play an important role in meeting future world energy demand consistent with the goal of sustainable development agreed at the Rio Conference in 1992

We recognise the importance of openness and transparency to obtain public trust which is a key factor for the use of nuclear energy

We recognize the importance of openness and transparency to obtain public trust which is a key factor for the use of nuclear energy

3 The security of all nuclear material is an essential part of the responsible and peaceful use of nuclear energy In particular, the safe management of fissile material, including material resulting from the dismantling of nuclear weapons, is imperative, not least as a safeguard against any risk of illicit trafficking in nuclear materials

4 In the spirit of the decisions adopted during the New York Conference of May 1995 on review and extension of the Non-Proliferation Treaty (NPT), including the Decision on principles and objectives for nuclear non-proliferation and disarmament, we will increase our cooperation in the field of nuclear non-proliferation and disarmament i e by promoting universal adherence to the NPT working vigorously to strengthen the International Atomic Energy Agency (IAEA) safeguards system and through effective and responsible export control measures We are issuing a separate text on a Comprehensive Nuclear Test Ban Treaty (CTBT) We renew our commitment to the immediate commencement and early conclusion of negotiations on a non-discriminatory and universally applicable convention banning the production of fissile material for nuclear weapons or other nuclear explosive devices

Nuclear Safety

5 Recognizing that the prime responsibility for nuclear safety rests with national governments it is of the first importance to continue to enhance international collaborative efforts to promote a high level of nuclear safety worldwide

Safety of Civilian Nuclear Reactors

6 Nuclear safety has to prevail over all other considerations We reaffirm our commitment to the highest internationally recognized safety level for the siting, design construction operation and regulation of nuclear power installations

7 The promotion of an effective nuclear safety culture in each country with nuclear installations is essential to that end

8 Sustainable nuclear safety also requires a supportive economic and legal environment whereby both operators and national regulatory bodies can fully assume their independent responsibilities

9 Nuclear safety can also be enhanced by greater international transparency in nuclear power activities, in particular by means of peer reviews, and this should lead to existing reactors which do not meet current safety requirements being brought to an acceptable level of safety or ceasing operation

10 The adoption of the Convention of Nuclear Safety, which reaffirms these fundamental safety principles, is a major accomplishment in this field We urge all countries to sign this Convention and to complete internal procedures to join so that the Convention can be brought into force expeditiously certainly before the end of 1996

11 National efforts have been made in the countries of Central and Eastern Europe and the Newly Independent States to improve nuclear safety levels, often in cooperation with multilateral and bilateral programmes In this regard, we acknowledge these important efforts to upgrade reactor safety and improve safety culture, but note that further substantial progress is still required We reaffirm our commitment to cooperate fully for this purpose

Nuclear Liability

12 An effective nuclear liability regime must assure adequate compensation to victims of, and for damage caused by, nuclear accidents In addition, to secure the degree of private sector involvement needed to undertake vital safety improvements, the regime should at the same time protect industrial suppliers from unwarranted legal action

13 The essential principles in this area are the exclusive and strict liability of the operator of the nuclear installations and ensuring needed financial security for adequate compensation

14 It is essential that countries with nuclear installations that have not yet done so establish an effective regime for liability for nuclear damage corresponding to these principles

15 It is important to work together on enhancing the international regime of liability for nuclear damage with a view to ensuring that it will attract wide adherence and accommodate any state which may wish to become a party We encourage the experts to make further progress to this end In this connection, the reinforcement of regional cooperation is welcomed

Energy Sector Strategies in Transition Countries

16 Efficient market-oriented strategies for energy sector reform are essential to promote nuclear safety This will generate adequate resources for investment in safety upgrades and maintenance, and encourage energy conservation All countries in transition should pursue such market-oriented reforms and investment strategies based upon least cost planning, giving due regard to nuclear safety and environmental criteria, and to energy efficiency and conservation

17 The International Financial Institutions have played a leading role in developing market-oriented energy sector reforms and investment plans Their continued involvement and support is critical to ensure further progress

Nuclear Waste Management

International Convention

18 National authorities must ensure radioactive waste is managed safely and that provisions are made for its proper handling, storage and ultimate disposal These are essential elements for any nuclear programme

19 The development of the Convention on the Safety of Radioactive Waste Management, based on these principles, is of paramount importance We call on all countries generating nuclear waste with nuclear installations to participate actively in the preparation of this Convention under the auspices of the I A E A and to encourage its effective finalization and prompt adoption

Ocean Dumping

20 We commit ourselves to ban dumping at sea of radioactive waste and encourage all states to adhere at an earliest possible date to the 1993 amendment of the London Convention

Nuclear Material Security

Programme for Preventing and Combating Illicit Trafficking in Nuclear Material

21 Illicit trafficking of nuclear material is a public safety and non-proliferation concern We recognized the importance of this issue at our meetings in Naples and Halifax As risks continue to exist, we have agreed on, and released, a programme for preventing and combatting illicit trafficking in nuclear material to ensure increased cooperation among our governments in all aspects of prevention, detection, exchange of information, investigation and prosecution in cases of illicit nuclear trafficking

We call on other governments to join us in implementing this programme

Nuclear Material Accounting and Control and Physical Protection

22 We reaffirm the fundamental responsibility of nations to ensure the security of all nuclear materials in their possession and the need to ensure that they are subject to effective systems of nuclear material accounting & control and physical protection These systems should include regulations, licensing and inspections We express our support for the I A E A safeguards regime which plays a critical role in providing assurance against the diversion of nuclear material going undetected We underline the need for the urgent strengthening of I A E A capabilities to detect undeclared nuclear activities We note that these measures are also conducive to preventing illicit trafficking of nuclear material

23 We recognize the importance of continually improving systems and technologies for controlling and protecting nuclear materials We urge nations to cooperate bilaterally, multilaterally and through the I A E A to ensure that the national systems for controlling nuclear materials remain effective We are encouraged by the wide array of cooperative projects underway in this field under bilateral and multilateral auspices and pledge to sustain and increase these efforts

24 We urge ratification by all states of the Convention on the Physical Protection of Nuclear Material and encourage the application of the I A E A recommendations on the Physical Protection of Nuclear Material

25 We pledge our support for efforts to ensure that all sensitive nuclear material (separated plutonium and highly enriched uranium) designated as not intended for use for meeting defense requirements is safely stored, protected and placed under I A E A safeguards (in the Nuclear Weapon States, under the relevant voluntary offer I A E A safeguards agreements) as soon as it is practicable to do so

Safe and effective Management of weapons fissile material designated as no longer required for defense purposes

26 Major steps have been taken in recent years towards nuclear disarmament This has created substantial stocks of fissile material designated as no longer required for defence purposes It is vital, as mentioned above, that these stockpiles are safely managed and eventually transformed into spent fuel or other forms equally unusable for nuclear weapons and disposed of safely and permanently

27 The primary responsibility for the safe management of weapons fissile material rests with the nuclear weapons states themselves, but other states and international organizations are welcome to assist where desired

28 We welcome the steps that the United States and the Russian Federation have taken to blend highly-enriched uranium (HEU) from dismantled nuclear weapons to low-enriched uranium (LEU) for peaceful non-explosive purposes, and the cooperation programs of Canada, France, Germany, Italy, Japan, the United Kingdom, the United States of America and other states with the Russian Federation for the safe storage, the peaceful uses of fissile material released by the dismantlement of nuclear weapons and their safe and secure transportation for that purpose, we encourage other efforts along these lines

29 We are determined to identify appropriate strategies for the management of fissile material designated as no longer required for defence purposes Options include safe and secure long-term storage, vitrification or other methods of permanent disposal and conversion into mixed-oxide fuel (MOX) for use in nuclear reactors We have agreed to share relevant experience and expertise to elaborate and implement these strategies We welcome plans to conduct small-scale technology demonstrations related to these options, including the possibility of establishing pilot projects and plants We shall convene an international meeting of experts in order to examine available options and identify possible development of international cooperation in the implementation of these national strategies, bearing in mind technical, economic, non-proliferation, environmental and other relevant considerations The meeting will take place in France by the end of 1996

30 We recognize the importance of ensuring transparency in the management of highly enriched uranium and plutonium designated as no longer required for defence purposes

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Collection of Selected Regulatory Documents Issued by the State Nuclear Supervisory Committee (Gosatomnadzor) of Russia of Importance to the Nuclear Industry, published by L Lehman & Associates, Inc , 1995

This collection contains regulatory information pertinent to nuclear firms who wish to operate or who are already operating, in Russia It contains eight regulatory documents which are separated into two sections, those pertaining to reactors and those pertaining to fuel cycle facilities or other activities involving the nuclear fuel cycle All regulatory documents are first summarised and then translated into English

The collection also contains a description of the functions of Gosatomnadzor, an organisational chart of this body, and a discussion of its legal basis In addition the document reviews the objectives of four major departments within Gosatomnadzor and its current licensing strategy

Technical Policy Developments Affecting the Nuclear Industry, published by L Lehman & Associates, Inc , 1993-1995

This publication is composed of the following five volumes

Volume I Status of Russian Nuclear Legislation, Nuclear Waste Disposal Programmes and Nuclear Safety Agreements by Linda Lehman and Julia Kamenskaya, October 1993

Volume II Topical Report on Waste Problems and Disposal in the Russian Arctic and Latvia Nuclear Regulation and Materials Control and Acounting April 1994

Volume III Topical Report on Status of Russian Legislation Concepts and Regulations Regarding Licensing or Permitting of Nuclear Facilities by Linda Lehman and Helen Zvereva October 1994

Volume IV Topical Report on Status of Russian Legislation Regulation Waste Management Environmental and Radiation Affects of the Russian Nuclear Industry and Nuclear Materials in the Republic of Kazakstan, by Linda Lehman and Helen Zvereva, June 1995

Volume V Topical Report on Legislative Developments Important Decrees, Waste Management and Nuclear Liability in the Russian Federation, to be published in May 1996

This major compilation deals with significant aspects of the Russian nuclear industry from the perspective of existing legislation, policies, agreements or programmes Together, these volumes provide a detailed and comprehensive description of Russian legislative actions in the fields of nuclear safety, radiation protection environmental effects, waste management materials control and accounting, and licensing of nuclear activities

Volume I deals with the most relevant legislation affecting the nuclear industry, describes the high-level waste disposal programmes in both Russia and Ukraine, addresses nuclear safety initiatives between the United States and Russia and offers opinions regarding Russian business opportunities

Volume II addresses nuclear waste problems in Arctic regions, describes the Gosatomnadzor, deals with materials control and accounting within the Kurchatov Institute and describes the Latvian low-level waste disposal programmes

Volume III provides a status report on Russian legislation affecting the nuclear industry, describes Russian "concepts" (such as radiation safety) which are important to the nuclear industry, deals with Gosatomnadzor's regulations and describes the environmental review process for nuclear facilities

Volume IV contains an updated status report on Russian legislation, regulations and waste management programmes, a discussion of environmental and radiation effects of the Russian nuclear industry and a review of the laws covering nuclear materials in the Republic of Kazakhstan

Volume V addresses new and critical legislative developments in Russian nuclear programmes, including draft and approved laws and decrees in the general field of nuclear activities and in the specific areas of radioactive waste handling, nuclear liability and insurance, and the importation and reprocessing of spent fuel

This publication will be a useful reference work for both government agencies and private sector firms wishing to do business in Russia as well as for those who have an interest in the subject

OECD Nuclear Energy Agency

Chernobyl – Ten Years On Radiological and Health Impact, OECD, Paris, 1996, 112 pages

The OECD Nuclear Energy Agency (NEA) released a report presenting an overall assessment, ten years after the Chernobyl accident, of the state of contamination of the territories affected by the radioactive release, the impact on the health of the populations, and the risks still anticipated for man and the environment

The report, intended for a broad readership, was prepared by a small group of specialists in radiation protection and public health from OECD countries and international organisations, under the aegis of the NEA

The report offers data on the dispersion and deposition of radionuclides within and outside the former Soviet Union, and provides estimates of the radiation doses received by the "liquidators" involved in the emergency and clean-up actions on the site, the populations around the damaged plant which were evacuated, people still in contaminated areas, and populations outside the former Soviet Union There is also an evaluation of the health, agricultural and environmental impacts of the accident and of potential risks associated with the "sarcophagus" and the other sources of contamination existing on the site Finally, the report discusses the lessons learnt by OECD countries and relevant international Organisations in terms of radiation protection infrastructures and emergency preparedness

This report, available in English, French and Russian, has been distributed free of charge and has been extremely well received by the general public

History of the Eurochemic Company: 1956-1990, Thirty-Five Years of International Co-operation in the Field of Nuclear Technology, by M.J.M Wolff, OECD Paris, 1995, 635 pages

This book retraces the history of Eurochemic, a European company engaged in the chemical treatment of irradiated fuel. Eurochemic was created in December 1957, under the aegis of the European Nuclear Agency, by the governments of thirteen European nations to develop international co-operation in the field of spent fuel recycling in nuclear reactors, with a view to the extraction of residual uranium and of plutonium.

Conceived as a facility for applied research and production, this company built and utilised an R & D laboratory and a prototype factory for chemical reprocessing near the nuclear research centre at Mol (Belgium). Its objectives were, first, the reprocessing of fissile materials and subsequently the management of its own wastes prior to being wound up as an ongoing concern.

As this new publication shows, Eurochemic was a model of international co-operation and contributed to an important historical aspect of nuclear technology. In fact it operated the first reprocessing facility for which a complete programme of decommissioning and dismantling of installations had been initiated as well as on the treatment of all categories of waste which had accumulated at the site.

The history of Eurochemic was also marked by the unusual nature of its incorporating statute. Eurochemic was established by a treaty between participating governments as an "international corporation with shares" for the purpose of combining the resources of private industry and the public sector and to allow its directing bodies to manage its operations with a large degree of autonomy. In fact, however, after the research and development phase, the absence of a commercial purpose resulted in financing and decision-making pressures being placed upon the governments concerned. The company was, therefore, wound up in 1990.

Intended for a large audience interested in the experience of international co-operation created by improvements in nuclear technology, this book, amply illustrated, demonstrates in a vibrant style the very real problems associated with the end of the nuclear fuel cycle.

European Commission

Energy in Europe, A Collection of Legislation and Other Instruments on Energy, by the General Directorate for Energy (DG XVII), European Commission, Luxembourg, 1995, 521 pages

The General Directorate for Energy of the European Commission (DG XVII) has just published a collection of Community legislation and other legal instruments in the energy field.

As well as dedicating a chapter to the objectives of Community energy policy this collection contains a complete and up-to-date list of all Community texts dealing with energy in its broadest sense: solid fuels, hydrocarbons and electricity, nuclear energy and the rational use of energy and of new or renewable energy sources.

With respect to nuclear energy which is addressed in Chapter 4, the Euratom texts are reproduced as well as those concerning security control, radioactive waste and radiation protection measures In addition, one will find the texts of certain co-operative agreements made between Euratom and such countries as Australia, Canada, the United States and Russia and between Euratom and the International Atomic Energy Agency

This publication, which is available in both English and French, will no doubt be an invaluable tool for anyone who needs to use or apply Community legislation in the energy field

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