



## Case Western Reserve Journal of International Law

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Volume 5 | Issue 2

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1973

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### Recommended Citation

Bernhard G. Bechhoefer, *The Nuclear Test Ban Treaty in Retrospect*, 5 Case W. Res. J. Int'l L. 125 (1973)

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# The Nuclear Test Ban Treaty in Retrospect

*Bernhard G. Bechhoefer*

**O**VER TEN YEARS AGO, the Soviet Union, the United Kingdom, and the United States signed a treaty banning nuclear weapons tests in the atmosphere, in outer space, and under water.<sup>1</sup> The road to this agreement was long and difficult. Discussions of

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arms control and disarmament and, in particular, control of nuclear energy, had commenced in the first month of the United Nations, January 1946, and had continued almost without interruption since that time.<sup>2</sup> The intervening years probably produced implicit accords — that an uncontrolled arms race increases the likelihood of a disastrous nuclear war; that one path the great powers must follow to reduce the likelihood of a nuclear war is the path of negotiations for arms control

no matter how hopeless the outlook; that any progress towards arms control will depend upon agreement among the nuclear powers and in particular between the U.S. and the Soviet Union.<sup>3</sup> Nevertheless, until August 1963, these negotiations had not produced a single substantive agreement limiting or controlling the buildup of armaments. President Kennedy described the Limited Test Ban Treaty as "the first concrete result of eighteen years of effort by the United States to impose limits on the nuclear arms race."<sup>4</sup>

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<sup>1</sup> UNITED NATIONS, THE UNITED NATIONS AND DISARMAMENT 1945-1965, at 176 (1967) [hereinafter cited as THE UNITED NATIONS AND DISARMAMENT].

<sup>2</sup> *Id.* at 1.

<sup>3</sup> B. G. BECHHOEFFER, POST-WAR NEGOTIATIONS FOR ARMS CONTROL 567-569 (1961).

<sup>4</sup> *Hearings on the Nuclear Test Ban Treaty Before the Committee on Foreign Relations of the Senate*, 88th Cong., 1st Sess. on Exec. M., at 2-4 (1963) [hereinafter cited as *Senate Foreign Relations Committee Hearings*].

From 1958 to 1963, the most serious, indeed the only serious, negotiations on arms control took place in the Eighteen Nations Committee on Disarmament (ENDC)<sup>5</sup> and some of its subcommittees on the discontinuance of all nuclear weapons tests. Despite strong pressures from the United Nations and the non-nuclear weapons states directed to the nuclear powers to reach some agreement, as late as June 1963, the negotiations had reached an apparent impasse primarily because of the inability of the U.S. and Soviet Union to reach agreement on the amount and character of on-site inspections which would be required in the territories of the nuclear powers to assure against clandestine testing of nuclear weapons.<sup>6</sup>

In April 1963, the Soviet Union gave some hints of a desire to improve the political atmosphere and in particular agreed to negotiate on a U.S. proposal to establish what later was described as a "hot line" of direct communication between the U.S. and Soviet governments. On June 10, President Kennedy delivered the Commencement address at American University, in Washington, D.C., entitled "Towards a Strategy of Peace" calling for increased understanding with the U.S.S.R.<sup>7</sup> He announced that he, United Kingdom Prime Minister Macmillan, and Chairman Khrushchev had agreed that high level discussions would begin shortly in Moscow on a *comprehensive* nuclear test ban treaty. On June 14, Chairman Khrushchev reiterated his determination not to permit on-site inspections as a part of a nuclear test ban treaty but stated that President Kennedy's American University address was "the greatest speech by any American President since Roosevelt."<sup>8</sup>

On July 2, 1963, Premier Khrushchev said that the U.S. and U.K. insistence on on-site inspections made an underground ban impossible. Therefore the Soviet Union was prepared to sign a limited treaty banning tests in three non-controversial environments — in the atmosphere, in outer space, and under water.<sup>9</sup>

On August 27, 1962, the U.S. and U.K. had submitted to the Eighteen Nation Committee on Disarmament a proposed treaty banning nuclear testing in these three areas, where on-site inspection

<sup>5</sup> For a brief description of the Eighteenth Nation Committee on Disarmament, see THE UNITED NATIONS AND DISARMAMENT, *supra* note 1, at 4-5.

<sup>6</sup> See THE UNITED NATIONS AND DISARMAMENT, *supra* note 1, at Chap. 8 & 9.

<sup>7</sup> For the text of the President's speech, see N. Y. Times, June 11, 1963, at 16.

<sup>8</sup> H. JACOBSON AND E. STEIN, DIPLOMATS, SCIENTISTS AND POLITICIANS 447-453 (1966) [hereinafter cited as JACOBSON AND STEIN].

<sup>9</sup> THE UNITED NATIONS AND DISARMAMENT, *supra* note 1, at 175-76. JACOBSON AND STEIN, *supra* note 6, at 454.

would not be required to determine whether or not the treaty was being observed.<sup>10</sup> President Eisenhower had made such a suggestion to Chairman Krushchev in 1959, and President Kennedy and Prime Minister Macmillan had formally offered such a treaty in September, 1961.<sup>11</sup> The Soviet Union had invariably rejected such an approach.

After Krushchev's speech, progress was rapid, resulting in an agreed text in thirty-four days. The debates in the United Nations, in the U.S. Congress and in the forum of world opinion leading to its approval in the U.N. and ratification stressed three areas of discussion: the immediate achievements of the treaty; its limitations in contrast to the hopes and desires set forth in numerous past U.N. resolutions; and the necessity of progress building on the treaty accords toward further limitation of nuclear armaments and a safer world.

Within these areas of discussion, a dozen or so specific problems have developed, some, but not all of which involved interesting questions which can be characterized as predominantly legal. It would not be fruitful to confine this article to a paragraph by paragraph analysis of the strictly legal issues, since the legal problems are fully understandable only in the context of surrounding political and strategic factors. Therefore, primarily to maintain a proper perspective, this article seeks to sketch the major problem areas with emphasis on those where interesting legal problems have arisen.

The text of the Treaty is sufficiently short to justify its reproduction in full as a part of the article.

#### TREATY BANNING NUCLEAR WEAPON TESTS IN THE ATMOSPHERE, IN OUTER SPACE AND UNDER WATER

The Governments of the United States of America, the United Kingdom of Great Britain and Northern Ireland, and the Union of Soviet Socialist Republics, hereinafter referred to as the "Original Parties,"

Proclaiming as their principal aim the speediest possible achievement of an agreement on general and complete disarmament under strict international control in accordance with the objectives of the United Nations which would put an end to the armaments race and eliminate the incentive to the production and testing of all kinds of weapons, including nuclear weapons,

Seeking to achieve the discontinuance of all test explosions of

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<sup>10</sup> (Letter of the Acting Secretary of State to the President recommending ratification of the Limited Test Ban Treaty, August 6, 1963) *Senate Foreign Relations Committee Hearings*, *supra* note 4, at 4.

<sup>11</sup> JACOBSON AND STEIN, *supra* note 6, at 171 and 282-83.

nuclear weapons for all time, determined to continue negotiations to this end, and desiring to put an end to the contamination of man's environment by radioactive substances,

Have agreed as follows:

#### ARTICLE I

1. Each of the Parties to this Treaty undertakes to prohibit, to prevent, and not to carry out any nuclear weapon test explosion, or any other nuclear explosion, at any place under its jurisdiction or control:

(a) in the atmosphere; beyond its limits, including outer space; or under water, including territorial waters or high seas; or

(b) in any other environment if such explosion causes radioactive debris to be present outside the territorial limits of the State under whose jurisdiction or control such explosion is conducted. It is understood in this connection that the provisions of the subparagraph are without prejudice to the conclusion of a treaty resulting in the permanent banning of all nuclear test explosions, including all such explosions underground, the conclusions of which, as the Parties have stated in the Preamble to this Treaty, they seek to achieve.

2. Each of the Parties to this Treaty undertakes furthermore to refrain from causing, encouraging, or in any way participating in, the carrying out of any nuclear weapon test explosion, or any other nuclear explosion, anywhere which would take place in any of the environments described, or have the effect referred to, in paragraph 1 of this Article.

#### ARTICLE II

1. Any Party may propose amendments to this Treaty. The text of any proposed amendment shall be submitted to the Depositary Governments which shall circulate it to all Parties to this Treaty. Thereafter, if requested to do so by one-third or more of the Parties, the Depositary Governments shall convene a conference, to which they shall invite all the Parties, to consider such amendment.

2. Any amendment to this Treaty must be approved by a majority of the votes of all the Parties to this Treaty, including the votes of all of the Original Parties. The amendment shall enter into force for all Parties upon the deposit of instruments of ratification by a majority of all the Parties, including the instruments of ratification of all of the Original Parties.

#### ARTICLE III

1. This Treaty shall be open to all States for signature. Any State which does not sign this Treaty before its entry into force in accordance with paragraph 3 of this Article may accede to it at any time.

2. This Treaty shall be subject to ratification by signatory States. Instruments of ratification and instruments of accession shall be deposited with the Governments of the Original Parties —

the United States of America, the United Kingdom of Great Britain and Northern Ireland, and the Union of Soviet Socialist Republics — which are hereby designated the Depositary Governments.

3. This Treaty shall enter into force after its ratification by all the Original Parties and the deposit of their instruments of ratification.

4. For States whose instruments of ratification or accession are deposited subsequent to the entry into force of this Treaty, it shall enter into force on the date of the deposit of their instruments of ratification or accession.

5. The Depositary Governments shall promptly inform all signatory and acceding States of the date of each signature, the date of deposit of each instrument of ratification of and accession to this Treaty, the date of its entry into force, and the date of receipt of any requests for conferences or other notices.

6. This Treaty shall be registered by the Depositary Governments pursuant to Article 102 of the Charter of the United Nations.

#### ARTICLE IV

This Treaty shall be of unlimited duration.

Each Party shall in exercising its national sovereignty have the right to withdraw from the Treaty if it decides that extraordinary events, related to the subject matter of this Treaty, have jeopardized the supreme interests of its country. It shall give notice of such withdrawal to all other Parties to the Treaty three months in advance.

#### ARTICLE V

This Treaty, of which the English and Russian texts are equally authentic, shall be deposited in the archives of the Depositary Governments. Duly certified copies of this Treaty shall be transmitted by the Depositary Governments to the Governments of the signatory and acceding States.

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

DONE in triplicate at the city of Moscow the fifth day of August, one thousand nine hundred and sixty-three<sup>12</sup>

In broad outline the years of negotiations showed three main objectives of a Treaty completely banning nuclear weapons tests — objectives which were only partially fulfilled by the Limited Test Ban. The individual provisions of the Treaty in some instances are directed towards achieving all of the objectives but in others towards only one or two objectives.

The first of these objectives was well expressed in the message of the President of the United States to the Senate transmitting the

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<sup>12</sup> The Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space, and Under Water with U.S.S.R. and U.K., August 5, 1963, 14 U.S.T. 1313, T.I.A.S. No. 5433.

Limited Test Ban Treaty: "The Treaty will curb the pollution of our atmosphere. While it does not assure the world that it will be forever free from the fears and dangers of radioactive fallout from atmospheric tests, it will greatly reduce the number and dangers of such tests."<sup>13</sup> As will be pointed out in a subsequent section, the Limited Test Ban Treaty accomplished this objective almost as completely as a treaty totally banning weapons tests.

In connection with the second and third objectives, the Limited Test Ban Treaty was a step on the road towards broader objectives. A second and broader objective was to limit the spread of nuclear weapons to an increasing number of states. Again to quote the President's message to the Senate, "While it [the Treaty] cannot wholly prevent the spread of nuclear arms to nations not now possessing them, it prohibits assistance to testing in these environments by others; it will be signed by many other potential testers; and it is thus an important opening wedge in our effort to 'get the genie back in the bottle'."<sup>14</sup>

The third main objective also contemplated further agreements and further progress. This thought is expressed in the President's letter transmitting the Treaty, as follows:

"While it will not halt the production or reduce the existing stockpiles of nuclear weapons, it is a first step toward limiting the nuclear arms race.

"While it will not end the threat of nuclear war or outlaw the use of nuclear weapons, it can reduce world tensions, open a way to further agreements, and thereby help to ease the threat of war."<sup>15</sup>

These three main objectives are set forth at this point for the reason that their interrelationship is the key to most of the specific problems discussed in this article. It should be noted that there was a great difference of viewpoints among states on the relative importance of the three objectives. It is safe to conclude that all states agreed that the first objective of reducing radioactive fallout from the atmosphere was the most important net gain from the Treaty. However, it will be obvious that the second objective of preventing an increase in the number of states possessing nuclear weapons was far less important to some, if not all, of the non-weapon states than to the nuclear powers. Indeed, a considerable number of non-weapon states, particularly those with potential of

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<sup>13</sup> *Senate Foreign Relations Committee Hearings*, *supra* note 4, at 3.

<sup>14</sup> *Id.* at 3.

<sup>15</sup> *Id.* at 3.

developing nuclear weapons, were willing to accept the Treaty largely because of the third objective. They hoped that the Treaty would lead rapidly to further agreements limiting the nuclear weapons race, perhaps reducing armaments and certainly lessening the dangers of worldwide holocaust.

Indeed the draft resolution approved by the General Assembly of November 27, 1963 by 104 votes to 1, with 3 abstentions, in addition to calling on states to ratify the Treaty requested "a conference of the Eighteen Nations Committee on its own to continue with a sense of urgency its negotiations to achieve its objectives set forth in the Preamble of the Treaty" which included a complete ban of nuclear weapons testing and also General and Complete Disarmament.<sup>16</sup> This general theme, that the prime importance of the Treaty is to act as an interim measure leading towards drastic arms limitations and a safer world, constantly recurs in the analysis of specific Treaty problems.

The letter of the President to the Senate spells out eight additional objectives of the Treaty, all of which might be categorized roughly as negative objectives to dispel any thought that the Treaty, except for its specific provisions, might limit U.S. initiatives and policies. For example, it would not "alter the status of unrecognized regimes," it would not "halt American nuclear progress," it does not "diminish the need for continued Western and American military strength."<sup>17</sup> President Kennedy apparently felt that such an approach was desirable and even necessary to assure Senate ratification. It does, however, graphically illustrate the differences in viewpoint concerning the Treaty between the nuclear haves, who feared undue limits upon testing, and the nuclear have-nots, who would support maximum limitations on the nuclear powers.

#### I. PERMITTED AND PROHIBITED NUCLEAR EXPLOSIONS

Article I(1)(a) and (b) of the Treaty, specifying the nuclear explosions which are prohibited, has produced most of the interpretive discussion of treaty provisions. Some five important questions have arisen: two during the negotiation of the text; two during the hearings leading to the ratification of the treaty by the U.S. Senate; and the fifth after the Treaty came into effect.

The Draft Partial Test Ban Treaty which the United States and

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<sup>16</sup> G. A. Res. 1910, 18 U.N. GAOR, Annexes, Agenda Item No. 73, at 5, U.N. Doc. A/5597 (1963).

<sup>17</sup> *Senate Foreign Relations Committee Hearings*, *supra* note 4, at 3.



United Kingdom tabled on August 27, 1962 in ENDC in defining prohibited explosions contained substantially the same language as the final treaty.<sup>18</sup> Paragraph I(a) prohibited explosions in the atmosphere, in outer space, or under water. The main drafting problem confronting the United States and the United Kingdom was to work out language to define the underground explosions which would be permitted. It would not have sufficed merely to authorize the underground explosions or alternatively to prohibit explosions in the atmosphere, in outer space and under water and prohibit explosions in other environments. Drafting along these lines would theoretically permit a State to detonate an explosion at a depth of say three feet under the ground with a shovelful of loose dirt covering the explosive device. Such an explosion might result in as much radioactivity as an explosion in the atmosphere which was prohibited. The suggested language prohibited explosions "in any other environment if such explosion causes radioactive debris to be present outside the territorial limits of the State under whose limits and control such explosion is conducted." Under this language an underground explosion which did not cause any venting at the surface would be permitted. Also, an underground explosion which vented would be permitted if the radioactive debris did not spread outside the territorial limits of the state controlling the explosion.<sup>19</sup>

The Soviet response to the August 27, 1962 proposal did not deal with this point, but rejected a partial test treaty since it would permit continued weapon improvements resulting from underground explosions. At this time the Soviet representative implied that if the U.S. continued weapons tests underground, the Soviet Union would continue to test in the atmosphere.<sup>20</sup>

Apparently the Western explanations of the suggested language satisfied the Soviet Union, which did not object to this provision during the conference after Soviet acceptance in principle of a limited test ban treaty. This formula does in fact cause some inequality among states since obviously a given amount of radioactive debris coming from an explosion in the middle of Siberia or the U.S. would be less likely to result in the debris spreading beyond the limits of the state than an identical explosion say in the Isthmus of Panama. Likewise problems have actually arisen as to measure-

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<sup>18</sup> Paragraph I(a) of the original draft read: "(a) in the atmosphere, above the atmosphere, or in territorial or high seas." JACOBSON AND STEIN, *supra* note 6, at 410.

<sup>19</sup> *Id.* at 410.

<sup>20</sup> *Id.* at 414.

ments to determine whether radioactive debris has spread beyond the territorial limits of a state, which will be considered in another section. The question of nuclear explosions for peaceful purposes permitted under the August 27, 1962 draft but excluded in the final text will also be considered in another section.

## II. ENCOURAGING A PROHIBITED EXPLOSION

The second paragraph of Article I imposed an obligation "to refrain from causing, encouraging, or in any way participating in, the carrying out of any nuclear weapon test explosion or any other nuclear explosion . . ." The August 27, 1962 proposal had merely prohibited carrying out a nuclear explosion. This change took place during the final month of negotiations leading to the agreed text<sup>21</sup> and occasioned considerable debate in the Hearings before the Senate Foreign Relations Committee.<sup>22</sup>

Senator Fulbright on August 14, 1963 wrote to Secretary of State Dean Rusk to ask whether the language of the Test Ban Treaty would prevent the U.S. from transmitting nuclear data to another power. On August 17, 1963 the Secretary of State replied as follows:

In the view of the executive branch, the test ban treaty would bar a party from giving materials for use in nuclear weapons, or information relating to their design or manufacture, to any other state, whether or not a party, if that state was engaged in, or proposed to engage in, nuclear weapon tests prohibited by the treaty. . . .

. . . . As you know, [The Atomic Energy Act of 1954] permits the President to give certain materials for use in nuclear weapons and information relating to their design or manufacture to another nation if he determines that 'such nation has made substantial progress in the development of atomic weapons' and if an agreement providing for such transfer has been before the Congress without objection for 60 days. . . . If a nation as to which the President could make the necessary determinations were to engage in or propose to engage in nuclear weapons tests in the prohibited environments, the authority granted by these sections of the act would be limited by the treaty, for, as has been stated above, the transfer of such information or materials to a country in these circumstances would violate article I, paragraph 2.<sup>23</sup>

The U.S. has on several occasions implemented this policy.

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<sup>21</sup> *Id.* at 457.

<sup>22</sup> See exchange between Senator Cannon and Secretary of Defense McNamara, *Senate Foreign Relations Committee Hearings, supra* note 4, at 180. Exchange between Senator Morse and Chairman Seaborg, *Id.* at 237-38.

<sup>23</sup> *Senate Foreign Relations Committee Hearings, supra* note 4, at 977-78.

The State Department Office of Munitions Control has denied export licenses to the French Government for essential components in their nuclear weapons testing program. However, the French apparently were able to obtain the important components from Sweden.<sup>24</sup> The British Government has taken similar steps.<sup>25</sup> Canadian restrictions on the sale of uranium to France requiring assurances that the uranium would not be used in the French weapons program resulted in considerable acrimony between the two countries and a debate in the Canadian Parliament.<sup>26</sup> The Soviet Union has more than ample authority to impose similar restrictions, but its performance has not been ascertained.<sup>27</sup>

### III. USE OF NUCLEAR WEAPONS

In the discussions in the Senate Committees dealing with the ratification of the Treaty, a number of critics of the Treaty, including former President Eisenhower, expressed fears that the Treaty would limit the U.S. in its right to use nuclear weapons in case of attack or armed conflict or to come to the assistance of its allies if they should be attacked. These fears stemmed from the language of Article I(1) under which the Parties to the Treaty undertook to prohibit not only "any nuclear weapon test explosion," but also "any other nuclear explosion."

The Report of the Secretary of State to the President contained the specific statement: "The Article does not prohibit the use of nuclear weapons in the event of war nor restrict the exercise of the right of self-defense recognized in article 51 of the Charter of the United Nations."<sup>28</sup> Despite a similar opinion from the Secretary of Defense,<sup>29</sup> the questions continued to be raised in the hearings. At the request of Senator Goldwater the Secretary of State consulted the Legal Adviser. The conclusion of an opinion dated August 14, 1963 was as follows:

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<sup>24</sup> Sulzberger, *Foreign Affairs: When the Atom Splits Friends*, N.Y. Times, July 2, 1965, at 28, col. 3 (late city ed.).

<sup>25</sup> Washington Center of Foreign Policy Research, The Johns Hopkins University, 4 Alternative Methods for Dealing with Breaches of Arms Control Agreements 384 (unpublished, 1968) [hereinafter cited as ACDA TR/107].

<sup>26</sup> *Id.* at 389-395.

<sup>27</sup> *Id.* at 385-389.

<sup>28</sup> *Senate Foreign Relations Committee Hearings, supra* note 4, at 5.

<sup>29</sup> *Id.* at 176.

"The question has been raised whether the words 'or any other nuclear explosion' impose any limitation on the use of nuclear weapons by parties in war.

"The answer is no."<sup>30</sup>

The Legal Adviser at some length discussed the background leading to the use of this language and pointed out

"This Treaty does not affect the use of nuclear weapons in war. It has to do with nuclear weapon testing in time of peace."

This understanding of the import of the Treaty is not confined to United States officials alone. For example, United Nations Secretary-General U Thant, appearing in Moscow at the Treaty signing, listed a number of "other equally important measures aimed at the relaxation of tension." Among these he included the following:

"I would also hope that the proposal, initiated in the fall of 1961, for convening a special conference for signing the convention on the prohibition of the use of nuclear and thermonuclear weapons for war purposes, will now receive wider support."

It would obviously be unnecessary to hold such a conference if the test ban treaty itself outlawed the use of such weapons in war.<sup>31</sup>

The meaning of the Treaty language and the reason for its use is well expressed by the Honorable Authur Dean, the U.S. negotiator.

The confusion appears to have arisen from a change in wording which had taken place during the Moscow negotiations in July 1963. In the draft treaty of August 1962, testing for weapons and testing for peaceful purposes had been separated into two articles. It therefore made complete sense for its Article I to refer only "to nuclear weapon test explosion." However, when the treaty draft was being discussed at Moscow and it became clear that the Russians would not accept the second article dealing with peaceful explosions, we had to make an adjustment in the wording of the new Article I. As the Legal Adviser to the State Department pointed out, we could no longer accept an Article I which referred only to nuclear weapon test explosions, because such wording might make it possible for a nation to claim the right to conduct nuclear explosions in the prohibited environments on the basis that it was not a test of a weapon or that it was for peaceful purposes. Therefore we had inserted in Article I, after the words "nuclear weapon test explosion," the words "and other nuclear explosion." The new phrase was intended to plug a loophole, not to inhibit the freedom of choice of weapons by a nation faced with a threat to its national security. To cite an authority on treaty interpretation, "The function of the words of a treaty is to mirror [the] design" of its framers. This was our design.<sup>32</sup>

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<sup>30</sup> *Id.* at 76.

<sup>31</sup> *Id.* at 78.

<sup>32</sup> A. DEAN, TEST BAN AND DISARMAMENT 100-1 (1966).

## IV. UNDERWATER TESTS

The Treaty bans nuclear explosions "at any place under its jurisdiction or control: (a) . . . underwater including territorial waters or high seas." The Legal Adviser of the State Department in the opinion previously cited interprets this language as follows:

"(a) \* \* \* *or underwater, including territorial waters or high seas;*"

The question has been raised whether all bodies of water, including inland waters, are within the scope of the italicized clause. The answer is, yes.

If a nuclear test or explosion is "underwater," it is prohibited by the Treaty.

The phrase "including territorial waters or high seas" is illustrative, and not limiting. It was inserted in the Treaty to remove any question that tests on the high seas were prohibited, and that a party conducting such tests would be considered to have at least temporary control of the area in which the test is conducted. Without this phrase, it might have been contended that tests on the high seas were not under the "jurisdiction or control" of a party within the meaning of Article I, and thus were not prohibited.

The present Treaty differs from the August 27, 1962, draft treaty tabled in Geneva by the United States and United Kingdom delegations. That treaty banned, in addition to tests in the atmosphere or outer space, tests "in territorial or high seas." Underwater tests in inland waters were not prohibited by this language. The change made by the present treaty makes clear that tests in inland water are prohibited.<sup>33</sup>

This interpretation is confirmed by writers on International Law<sup>34</sup> who state categorically that an underwater test is above ground and not underground. Despite the clear intent of the Treaty its opponents during the sessions of the Senate Subcommittees dealing with the nuclear test ban proposals, found in this language a devious Soviet plot to place the U.S. at a strategic disadvantage. The most forceful presentation of this view was in the testimony of Admiral Arleigh Burke on August 27, 1963. Admiral Burke stated "The treaty, while applicable to nuclear explosions 'underwater, including territorial waters or high seas' does not make specific mention of 'internal waters.' The explanation of what that may come to mean is complex and hard to follow, but it is for these very reasons that the point needs to be thoroughly analyzed for some day it will most likely be used to our disadvantage."<sup>35</sup>

<sup>33</sup> *Senate Foreign Relations Committee Hearings, supra* note 4, at 61-2.

<sup>34</sup> Schwelb, *The Nuclear Test Ban Treaty and International Law*, 58 AM. J. INT'L L. 642, 647-8 (1964); E. STEIN, 1 IMPACT OF NEW WEAPONS TECHNOLOGY 325 (1971) [hereinafter cited as STEIN].

<sup>35</sup> *Hearings on Military Aspects and Implications of Nuclear Test Ban Proposals and*

This conclusion totally disregards the obvious explanation of the language set forth in the opinion of the Legal Advisor of the State Department quoted above. Admiral Burke then proceeds with his own explanation: "First, underwater testing *per se* is not illicit; such tests would be possible for all parties under this treaty." He reaches the conclusion that such explosions are not illicit despite the express language of Article I(a) banning underwater explosions. He then assumes that the phrase "including territorial waters or high seas" has the effect of excluding other underwater areas—territorial seas or inland seas. He then suggests that the Soviet Union has territorial seas surrounding it such as the Sea of Okhotsk, or the Kara Sea, where it could make tests which could not be detected by the U.S. On the other hand, the largest similar body of water adjoining the U.S., Chesapeake Bay, is too small to permit undetected tests. Therefore, Admiral Burke finds a situation deliberately planned to the disadvantage of the United States.<sup>36</sup>

It is suggested that Admiral Burke's conclusion is farfetched. As pointed out, nothing in the Treaty language confines the prohibition on underwater testing to tests under territorial waters or the high seas. If the Soviet Union conducted such tests and they were detected by the U.S., the U.S. would with overwhelming World support proclaim that this was a breach of the Treaty. The breach would justify immediate abrogation of the Treaty by the U.S. In view of the United States' position that it must be prepared to resume testing in case of violations, it is difficult to see how such a situation would seriously damage the U.S. Politically, however, it seems highly unlikely that regardless of the fact that nuclear tests are becoming progressively cleaner, any state would be willing to conduct such tests either in its inland waters, its territorial waters, or its territorial seas. The Soviet Union already has a huge pollution problem in Lake Baikal.

The remaining argument of Admiral Burke that such underwater tests might not be detected by the U.S. also seems farfetched. The shift from an unlimited test ban to a limited test ban arose because the United States and the United Kingdom contended that without on-site inspection they might not be able to detect some underground tests. The entire basis for the Limited Test Ban Treaty was that the U.S. and U.K. could detect tests in any other

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*Related Matters Before the Preparedness Investigating Subcomm. of the Senate Comm. on Armed Services, 88th Cong., 1st Sess., pt. 2, at 925-6 (1964) [hereinafter cited as Preparedness Subcommittee Hearings].*

<sup>36</sup> *Id.* at 922.

environment, including underwater tests. We are aware of no serious contentions that this was an erroneous judgment.

It should be noted that in the ten years that have followed the Treaty none of these interpretations of the language of Article I set forth above as to prohibited or permitted explosions have caused problems. No state adhering to the Treaty has made nuclear tests underwater or in the atmosphere. No state has contended that the nuclear test ban in any way restricts the use of nuclear weapons in war and indeed, negotiations have continued without much success during the entire ten year period in the direction of limiting the wartime use of nuclear weapons. On the problem of what constitutes encouragement of a state to carry out a nuclear test, the governments of the U.S., U.K. and Canada have taken administrative decisions which seem to conform to the intent of the Treaty. The sole section of Article I which has required interpretation is the definition of explosions causing radioactive debris to be present outside the territorial limits of the state controlling an explosion.

#### V. RADIOACTIVE DEBRIS

During the Senate Hearings prior to the ratification of the Nuclear Test Ban Treaty, a number of witnesses pointed out a possible ambiguity in defining an explosion which "causes radioactive debris to be present outside the territorial limits of the state under whose jurisdiction or control such explosion is conducted."<sup>37</sup> These ambiguities arise from the technical problem of measuring radioactive debris and determining its origin. The atmosphere at all times contains a certain amount of radioactivity which may increase without any known cause. Even a fairly substantial increase in radioactivity at a measuring station on the boundary of a country, coupled with an appropriate time relationship between the increase and an underground nuclear explosion which vented, would not necessarily prove the causal relationship between the venting and the increase of radioactivity. The negotiators of the Treaty apparently did not worry greatly over this problem since measuring techniques would be adequate to establish the causal relationship between a venting explosion and measurable exposures to persons, occurring shortly after the explosion. This has been the one problem, however, where the actual practices of the Soviet Union and the United States required Treaty interpretation.

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<sup>37</sup> See generally *Senate Foreign Relations Committee Hearings, supra* note 4, at 2-4.

On March 13, 1964, the U.S. conducted an underground test which, notwithstanding precautions, vented. The radioactive debris was traced throughout the southwestern part of the United States. No other country reported detecting it within its boundaries. However, on March 17, 1964, *Isvestia* wrote an article on these tests entitled "Dangerous Experiments" pointing out that if the debris had spread, it would be a direct violation of the Treaty. The Soviet Union made no official request for information on the test.<sup>38</sup>

On January 15, 1965, a Soviet underground nuclear test in the Semipalitinsk region was held. The detection system disclosed a "certain amount of venting . . . and that the radioactivity measured to date will not produce measurable exposures to persons." The Secretary of State, on January 19th, asked the Soviet Ambassador for full details concerning the explosion and an explanation of how the venting took place. The State Department Press Officer was quoted as saying that in case of a treaty provision of this character "it is necessary to work out a pragmatic meaning and application of the language in the light of actual experience." An Associated Press statement reported that the Japanese weather bureau had detected more radioactivity from this test venting than it had detected from the Chinese atmosphere explosion the previous October. On January 25th, the Secretary of State met with the Soviet Ambassador who stated that the amount of radioactive debris was "so insignificant that the Soviet Government excludes the possibility of a violation of the Limited Nuclear Test Ban Treaty." Ambassador William Foster, the Director of the United States Arms Control Disarmament Agency, reported to the Senate Foreign Relations Committee that the event may have constituted "a technical violation" of the Treaty.<sup>39</sup>

On January 17, 1966, a U.S. B-52 Bomber carrying nuclear weapons crashed over the Spanish coast. The Soviet Union in an aide memoir on February 17, 1966 claimed that "the detonator of at least one of these bombs exploded and radioactive substances were released." The aide memoir went on to claim a violation of the Limited Test Ban Treaty. This was a pure propaganda ploy. According to Ambassador Foster "no nuclear explosion occurred because the controls designed to prevent such explosion by accident

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<sup>38</sup> 4 ACDA TR/107, *supra* note 25, at 356.

<sup>39</sup> *Id.* at 356-358.



performed as they were intended to perform.”<sup>40</sup> The American Government rejected the Soviet allegation in an aide memoir of February 25, 1966.

On September 12, 1966, the U.S. conducted an underground nuclear test in Nevada. A very small amount of radioactivity leaked into the atmosphere but according to the State Department no radioactive debris was carried outside the U.S. The Soviet Ambassador, on October 10th, inquired about the radioactivity in the air from this underground test.<sup>41</sup>

On October 27, 1966, the Soviet Government conducted on the Arctic Island of Novaya Zemlya an underground test explosion which had a force of about one megaton. The Soviet Ambassador was called to the State Department for information concerning this test. The New York Times of November 9 quoted the trade magazine AVIATION WEEK in saying that considerable venting of nuclear debris had been detected by the U.S. in the Far East and in Europe. This Soviet explosion apparently took place within fifteen minutes after a Chinese nuclear explosion in the atmosphere. There is considerable question whether it would have been possible to distinguish between the radioactive materials from the two different tests.<sup>42</sup>

It seems probable that other ventings may have occurred more recently in connection with Soviet and U.S. underground explosions. However, there have been no diplomatic repercussions. It is apparent that the Soviet Union and the United States have agreed to disregard “the technical violations” particularly since both powers may have been guilty of such violations. No other state has used these technical violations as a pretext for withdrawing from the Treaty pursuant to Article IV or for any contention that it is released from the Treaty by reason of violations of other parties. Nor has any party invoked any of the possible International Law procedures available in the event of breaches of treaties.

## VI. RIGHT OF WITHDRAWAL

Article IV provides “Each party shall in exercising its national sovereignty have the right to withdraw from the Treaty if it decides that extraordinary events related to the subject matter of the Treaty have jeopardized the supreme interests of its country. It

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<sup>40</sup> *Id.* at 358.

<sup>41</sup> *Id.* at 364.

<sup>42</sup> *Id.* at 364.

shall give notice of such withdrawal to all other parties to the Treaty three months in advance." The critics of the Treaty in the United States Senate immediately pointed out that this provision has the effect of reducing the commitments of the parties almost to zero since, for any excuse which a state deemed sufficient, it would be able to withdraw from the Treaty after ninety days and relieve itself of the commitment. This was a major reason for the U.S. Government at the time of submission to the Senate insisting that it must maintain a posture of nuclear strength and be ready to resume atmospheric testing if the Soviet Union withdrew from its Treaty obligations.

The history of this clause sheds considerable light on the circumstances surrounding the final successful negotiations leading to the Treaty.<sup>43</sup> The original draft partial test ban treaty submitted by the Western powers on August 27, 1962, and rejected by the Soviet Union, provided a complicated procedure for withdrawal which would have taken up to 120 days and would have involved a conference of all signatory states. Furthermore, the grounds for withdrawal were considerably more limited than in the final version.<sup>44</sup>

Foreign Minister Gromyko originally had argued that there was no need for a withdrawal clause since the right to withdraw was an inherent right of sovereignty.<sup>45</sup> This Soviet position has no support in International Law even from Soviet authorities. Beginning in the Nineteen Twenties, the Soviet jurists began to stress international treaties as the prime source of International Law; and that States are "obliged to perform international treaties in good faith which are concluded on the basis of equality and do not contradict prevailing International Law."<sup>46</sup> This Soviet position excused the Soviet repudiation of the treaties of the Czarist regime and at the same time promised future good conduct. Gromyko's remark was apparently a reversion to the earlier Communist position that any State was free at any time to renounce any Treaty. It may quite possibly have arisen from the desire of the Soviet delegates on the

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<sup>43</sup> JACOBSON AND STEIN, *supra* note 8, at 455-458.

<sup>44</sup> Text in: The Nuclear Test Ban Treaty, Report of the Committee on Foreign Relations, U. S. Senate, 88th Cong., 1st Sess., Exec. Rep. No. 3, Sept. 3, 1963, Appendix II, at 29.

<sup>45</sup> (Testimony of Dean Rusk) *Senate Foreign Relations Committee Hearings, supra* note 4, at 50.

<sup>46</sup> 4 ACDA TR/107, *supra* note 25, at 93.

question of testing to have freedom as complete as China, which was obviously not going to sign the Treaty.<sup>47</sup>

Obviously, the United States and other Western powers could not subscribe to such a Soviet position which would call in question the entire range of Treaty obligations. Furthermore, if the Treaty were silent on the right of withdrawal, past experience on the matter of testing had made it clear that the obligations of the Soviet Union and the United States would not in fact be equal. The United States would feel itself bound not to test without going through some lengthy procedures to justify the circumstances requiring it to resume tests. On the other hand, the Soviet Union, in the recent past, had repudiated the moratorium on tests merely by conducting a nuclear test with a simultaneous public announcement of the test.

The withdrawal language was submitted at the request of the Joint Chiefs of Staff who insisted that it was absolutely essential from the standpoint of American military security.<sup>48</sup> During the Moscow discussions Ambassador Harriman told Gromyko that without a withdrawal clause there could be no treaty.<sup>49</sup>

The exact stipulation is so loose that it has been likened to "a marriage contract with a protocol for divorce."<sup>50</sup> Stein concludes that in light of the legislative history the withdrawal clause was "a part of a hasty political compromise rather than a reflection of a general principle of Treaty Law." It is ironical that some of the strongest opponents of the Treaty opposed U.S. ratification partly on the ground that the provision reduced the Treaty commitments almost to zero, and, therefore, adversely affected American security.<sup>51</sup>

This type of provision turned out to be more important to the non-nuclear weapon states than to the great powers. The acceptance by the non-weapon states of the unequal situation imposed by the Non-Proliferation Treaty depended upon progress towards nuclear disarmament. In the absence of such progress, the non-weapon states through their right of withdrawal preserved their future options.

Regardless of hastily drafted and broad language susceptible to

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<sup>47</sup> JACOBSON AND STEIN, *supra* note 6, at 457.

<sup>48</sup> *Preparedness Subcommittee Hearings*, *supra* note 35, at 558.

<sup>49</sup> 4 ACDA TR/107, *supra* note 25, at 332.

<sup>50</sup> T. SORENSON, KENNEDY 736 (1965).

<sup>51</sup> (e.g., testimony of Strausz-Hupe) *Senate Foreign Relations Committee Hearings*, *supra* note 4, at 511.

varying interpretations, the same general formula has been followed in the Outer Space Treaty permitting a withdrawal on one year's notice,<sup>52</sup> the Seabed Treaty,<sup>53</sup> the Non-Proliferation Treaty<sup>54</sup> and the Treaty for the Prohibition of Nuclear Weapons in Latin America.<sup>55</sup> Despite international crises no state has yet taken advantage of its right of withdrawal. It is suggested that this formula, however ambiguous and however defective in terms of fundamental principles of International Law, has provided a realistic compromise which gives states great flexibility in meeting emergencies such as the outbreak of war among possible minor nuclear powers or revolutionary new technological developments. At the same time the states are not totally free to repudiate their obligations without incurring stigma.

## VII. NON-ADHERING STATES

Until this point, the discussion has been addressed primarily to the question: What is the meaning of the Treaty? The remaining issues are directed primarily to a different question: Where does the Treaty lead? For the non-weapons states, the latter question was frequently the more important question.

Article III, paragraph 3 of the Treaty provided that it "shall enter into force after its ratification by all of the Original Parties and the deposit of their instruments of ratification." The Original Parties were the United States, the United Kingdom, and the Soviet Union. Thus theoretically the Treaty could go into effect without any of the non-weapon states and without China and France adhering to it. How significant would the Treaty be with few states adhering?

A Treaty adhered to solely by the "Original Parties" would go a long way towards meeting one of its three prime objectives, the curbing of the pollution of the atmosphere at least and until the number of nuclear explosions in the atmosphere by other states resulted in substantial fallout. Between the effective date of the

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<sup>52</sup> Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, Jan. 27, 1967, 18 U.S.T. 2410, T.I.A.S. No. 6347.

<sup>53</sup> Law of the Sea: Convention on the Continental Shelf, April 29, 1958, 15 U.S.T. 471, T.I.A.S. No. 5578.

<sup>54</sup> Treaty on the Nonproliferation of Nuclear Weapons, July 1, 1968, U.N. Doc. A/RES/2373 (XXII), Annex U.N. Doc. A/7016/Add. 1.

<sup>55</sup> Additional Protocol II to the Treaty for the Prohibition of Nuclear Weapons in Latin America, Feb. 14, 1967, 22 U.S.T. 754, T.I.A.S. No. 7137.

Treaty and 1972, France detonated 26 atmospheric explosions and nine underground explosions, China has had 13 atmospheric and one underground explosion. The total fallout from these explosions has been relatively insignificant and has not prevented steady lowering of atmospheric levels of radioactivity.<sup>56</sup>

However, a second main objective of the Treaty — that of preventing the spread of nuclear arms to nations not possessing them, would be thwarted if any substantial number of states with nuclear capabilities failed to ratify the Treaty and went forward despite the Treaty to develop nuclear weapons capabilities. In fact, the vast majority of states accepted the Treaty. Only France, which had already made nuclear tests, and China, which was about to start such tests, continued their testing programs.

The emergence of five nuclear powers rather than three of course enhances the possibility of irresponsible resort to nuclear weapons. However, France at all times, and China certainly within the last year, have shown a sense of political responsibility indicating that they may be as cautious in brandishing nuclear weapons as the three powers that developed them at an earlier time.

It must be recognized that neither France nor China have developed weapons systems which could pose a major threat to the U.S.S.R. or to the U.S. It is unlikely that France will ever develop a system of such magnitude and the emergence of a major Chinese threat seems some time off.<sup>57</sup> Therefore, for the present, the failure of China and France to adhere to the Treaty and their continuing atmospheric tests have not significantly impaired the effectiveness of the Limited Test Ban. A recent study concluded that only seven non-nuclear weapons countries have industrial economies capable of supporting the manufacture of a sizeable number of reasonably sophisticated nuclear weapons and of systems for their delivery within five to ten years.<sup>58</sup> Six of the seven, Australia, Italy, Canada, Japan, Sweden and West Germany adhered to the Test Ban Treaty; the seventh, India, failed to adhere but has not made any weapons tests. India, as well as Pakistan, Israel and some of the Arab States

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<sup>56</sup> See *Hearings on the Treaty on the Nonproliferation of Nuclear Weapons before the Senate Comm. on Foreign Relations*, 90th Cong., 2nd Sess., pt. 1, at 32 (1969) [hereinafter cited as *Nonproliferation Treaty Hearings*]; STEIN, *supra* note 34, at 327-328.

<sup>57</sup> H. KISSINGER, *THE NECESSITY FOR CHOICE* 241 (1961).

<sup>58</sup> B. BOSKEY AND M. WILLRICH, *NUCLEAR PROLIFERATION: PROSPECTS FOR CONTROL* 29 (1970) [hereinafter cited as *NUCLEAR PROLIFERATION*]; see also, A. BUCHAN, *A WORLD OF NUCLEAR POWERS?* 5 (1966); and M. WILLRICH, *GLOBAL POLITICS OF NUCLEAR ENERGY* 85 (1971).

have to a certain extent used their failure to adhere as a political weapon. Regardless of the wisdom or effectiveness of such a course, their failure to adhere to the Test Ban Treaty so far has not materially affected the Treaty objective of limiting the spread of nuclear weapons systems, nor has it had any apparent effect on progress towards other agreements in the atomic energy field.

### VIII. TOWARD AN UNLIMITED TEST BAN

The Treaty in its Preamble specifically stated the international objective of achieving "the discontinuance of all test explosions of nuclear weapons for all time" and of continuing "negotiations to this end . . . to put an end to the contamination of man's environment by radioactive systems." This expectation that the next step towards limiting nuclear weapons and towards a safer world would be an unlimited test ban treaty, failed to materialize for a number of reasons.

First, the original draft for a Limited Test Ban Treaty submitted by the U.S. and U.K. contained an exception to authorize nuclear explosions for peaceful purposes. Such an exception, using the code designation adopted by the U.S. will be described as the "plowshare" exception. The Soviet Union rejected this approach on the ostensive ground that the plowshare exception could be used to evade the weapons test ban. The original initiative of the U.S. and U.K. to authorize nuclear explosions for peaceful purposes had reflected long range research programs already undertaken by both the U.S. and the U.S.S.R. to determine the practical feasibility "of nuclear explosives . . . in projects with economic objectives." Such projects included the employment of nuclear explosives "to assist in the recovery of natural resources, to create cavities for the storage of natural gas, to aid in water resources development, to excavate channels and harbors, to change the course of rivers, to construct dams, to be a radiation source in scientific experiments."<sup>59</sup>

The Limited Test Ban Treaty as it emerged did not completely prevent such explosions provided that they did not cause radioactive debris to be present outside the territorial limits of the State under whose jurisdiction or control the explosions were conducted. In general, the programs to assist in the recovery of natural resources and to create cavities for the storage of natural gas would not vent and therefore could be conducted after the Treaty became effective.

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<sup>59</sup> NUCLEAR PROLIFERATION, *supra* note 58, at 87.

On the other hand, the excavation of channels and harbors using nuclear weapons would be forbidden.

It seems probable that the Soviet opposition to permitting a plowshare exception stemmed more from a realization of the complex legal problems involved in its formulation than from a fear that the exception would be used to promote weapons programs. The vast programs of underground explosions undertaken since the Treaty by both the U.S.S.R. and the U.S. to develop their weapons systems indicate small concern for the treaty objective of limiting the weapons program. The legal problems would have been sufficiently complex as to stall adoption, signature and ratification of the Limited Test Ban Treaty for a long time. The same complexities are one reason for the lack of progress toward an unlimited test ban treaty, especially since the peaceful applications of nuclear explosions most likely to become economically feasible in a five or ten year period were those which would not result in venting and could therefore be carried on under the existing treaty. They could not however be conducted under an unlimited test ban without a plowshare exception.

A second and even more important reason for not moving rapidly to agreement on an unlimited test ban can be inferred from the tremendous programs of underground weapons tests undertaken by both the U.S. and the U.S.S.R. which make it clear that both countries had the capability and the desire to improve their weapons systems through underground testing. It is only in the past year after the discharge by the U.S. of the huge Amchitka explosion which followed a Soviet underground explosion of greater magnitude, that both countries have slowed down in their underground tests and have given some indications that the objectives of the underground weapons tests may at long last have been achieved.

A third factor which steered the Arms Control negotiations away from the objective of an unlimited test ban was the realization that the time had passed when an unlimited test ban would serve much of a purpose in preventing the proliferation of nuclear weapons systems. In 1963 four States had weapons systems and China was on the verge of its first nuclear explosion. The fact that practically all tests had resulted in detonations with almost no "duds" made it probable that non-weapons states could acquire weapons capabilities even without testing.

At the same time, by 1963 the U.S.S.R. and the U.S. were acutely aware of the implications of the technological breakthrough which

had made nuclear power economically feasible. The danger is graphically described as follows:

The stockpiles of plutonium will soon dwarf the amounts of fissionable materials in the nuclear weapons stockpiles of all nuclear weapons States. Moreover, tens of thousands of kilograms of plutonium will be available in non-nuclear weapon States. Yet less than ten kilograms of plutonium are required for a bomb capable of destroying a medium-sized city. The latest threat to world security in civil nuclear power programs is already clear and will grow to staggering dimensions.<sup>60</sup>

The emphasis in international negotiations logically shifted to an approach to meet this menace head-on, the Non-Proliferation Treaty.

### IX. TOWARDS A NON-PROLIFERATION TREATY

Commencing in 1958 a number of resolutions passed by the General Assembly of the United Nations had suggested negotiations which might lead to a treaty to prevent the spread of nuclear weapons. In the General Assembly of 1962 there was considerable support for the idea that such a treaty should be given priority after an agreement had been worked out on the cessation of nuclear weapons tests.<sup>61</sup> The 1962 discussions of course preceded the Limited Test Ban and assumed that the first agreement would be an unlimited test ban. It was not however until 1965 that the General Assembly and the United Nations specifically called upon the Eighteen Nations Disarmament Commission to reconvene as soon as possible to accord specific priority to consider a treaty to prevent the proliferation of nuclear weapons. Beginning in 1964, the emphasis on the next step to nuclear disarmament shifted from negotiating an unlimited test ban to negotiating the non-proliferation treaty. On June 23, 1964, the U.S. presented to the ENDC a proposal for a complete "cutoff" of fissionable materials for weapons programs indicating a major change in philosophy.<sup>62</sup> The 1964 proposal was resubmitted to the ENDC in the form of a draft non-proliferation treaty on August 17, 1965. The Soviet Union made its own proposal on September 24, choosing the U.N. General Assembly rather than the ENDC as the forum for its proposal.<sup>63</sup>

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<sup>60</sup> M. WILLRICH, NON-PROLIFERATION TREATY: FRAMEWORK FOR NUCLEAR ARMS CONTROL 30 (1969) [hereinafter cited as NON-PROLIFERATION TREATY].

<sup>61</sup> THE UNITED NATIONS AND DISARMAMENT, *supra* note 1, at 195.

<sup>62</sup> Document DC/209, annex 1, section J (ENDC/134), at 34.

<sup>63</sup> NON-PROLIFERATION TREATY, *supra* note 60, at 63.



Despite the mutual interest of the Soviet Union and the United States in achieving such a Treaty, it took more than three years from the original U.S. suggestion to resolve the differences between the Soviet Union and the U.S. centering "on the defense of Western Europe where American weapons were known to be present and in the possession of American and other national forces, but over which the U.S. had a unilateral right of decision as to their use, the national forces being integrated within the NATO military command arrangements."<sup>64</sup> The United States at this time had proposed to its allies in Western Europe the so-called "Multilateral Nuclear Force" (MLF) under which a NATO fleet would have custody of nuclear weapons with the control of their use remaining in the United States. Without going into any details or passing on the overall merits of any such proposal, it clearly created great difficulties for the Soviet Union in going forward towards a nuclear cutoff. Since China had not yet achieved a nuclear capability the effect of a "cutoff" plus the MLF in the Soviet eyes might be that China, a Communist State, would be barred from developing a nuclear weapons capability while West Germany would have a finger on the nuclear trigger. To be sure, the United States went to great lengths to show technical arrangements to prevent Germany having its finger on the trigger. However, these technical explanations, and indeed the entire concept of the MLF was too complex to explain in a manner that would be convincing to world public opinion. Rapid progress toward a non-proliferation treaty commenced in 1967 when the U.S. virtually abandoned its advocacy of the MLF.

It is outside the purposes of this article to enter into a detailed discussion of the negotiation or details of the Non-Proliferation Treaty except insofar as the Treaty has affected and is likely to affect the status of the Limited Test Ban. As pointed out, the Limited Test Ban Treaty in general does not differentiate between weapon states and non-weapon states. Both weapon states and non-weapon states are prohibited from testing in the atmosphere, in outer space, or underwater. Both weapon states and non-weapon states are permitted to test nuclear devices underground. The sole factual differentiation between weapon and non-weapon states is that a test which vented in the middle of Siberia might not result in radioactive debris spreading outside the territories of the Soviet Union while a similar test in a smaller country would probably result in such a spread of fissionable material. On the other hand, the Non-Proliferation

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<sup>64</sup> A. MCKNIGHT, *ATOMIC SAFEGUARDS* 67 (1971).

Treaty as it emerged differentiated sharply between the weapon states which will continue to have their stockpiles of weapons and are permitted to increase these stockpiles of weapons; and the non-weapon states which are forbidden to acquire nuclear explosive devices either through manufacture or through transfer. In the area of testing nuclear explosives, the effect of the Non-Proliferation Treaty is that the weapon states may continue underground nuclear tests whether for weapons or for peaceful purposes, while such testing is prohibited for non-weapon states. This unequal treatment has resulted in loud protests by the non-weapon states particularly in connection with the problem of future nuclear explosions with peaceful objectives. The non-weapon states could rightly proclaim that the Non-Proliferation Treaty was creating a monopoly among the weapon states for the development of peaceful applications of nuclear explosions. The Limited Test Ban Treaty sought to silence these objections by paragraphs in the Preamble affirming the principle that the benefits of peaceful applications of nuclear technology including those derived from the development of nuclear explosive devices should be available for peaceful purposes to all parties to the Treaty whether weapon or non-weapon states. Article V of the Treaty goes on to provide machinery under which the nuclear weapon states will make the benefit of peaceful applications of nuclear explosions available to the non-nuclear weapon states through the weapon states conducting explosions on behalf of the non-weapon states.

So long as these peaceful explosions would not vent, for example, explosions to release oil or gas, or to develop underground storage cavities, they could be conducted by a weapon state on the territory of and for the benefit of a non-weapon state without violating either the Non-Proliferation Treaty or the Limited Test Ban Treaty. However, any peaceful explosion to dig a canal or to establish a harbor would of necessity result in fallout spreading beyond the boundaries of a state except if the fallout were reduced to a point which is apparently still not technologically feasible. Therefore the development of this type of peaceful use of nuclear explosions would inevitably require either amendment to the Limited Test Ban Treaty or perhaps an interpretation, the practical equivalent of an amendment. It seems inevitable that at some future time, international action will be required to permit peaceful nuclear explosions.

The chief factors in determining that time probably will be the

pressure of World opinion, progress towards economically feasible uses of nuclear explosions, and whether or not the Limited Test Ban Treaty is converted into an unlimited ban.

In 1964 and 1965, former President Johnson succeeded in convincing the World that economically feasible uses for nuclear explosions were just around the corner. At that time, the U.S. was seeking to negotiate a treaty with Panama for a sea level canal. When the Panamanian negotiators seemed adamant in adhering to unreasonable positions, the President determined to explore the possibilities of alternative routes. Since the alternatives apparently could be justified economically only if nuclear explosions were used, the President in 1965 directed a commission by December 1, 1970 to work out a plan for digging the canal with nuclear explosives and to locate the site.<sup>65</sup> The President made no mention of political factors such as the probability that such nuclear explosions would be a violation of the Limited Test Ban Treaty. This incident, which can be best characterized as foreign policy by trauma, created unjustified expectations among the non-weapon states of immediate benefits which in fact were years distant. With considerable difficulty the nuclear weapon states were able to close the 'Pandora's Box' which had been opened by the Panama episode and the Non-Proliferation Treaty was signed and adhered to by the vast majority of states.

A recent study of the progress of the plowshare program points out the numerous

. . . [I]ntangible factors which dominate any analysis of the economic utility of nuclear explosives. Any such analysis is, therefore, likely to reflect the perspectives of the analyst.

Statements made by persons associated with the U.S. Atomic Energy Commission, its contractors, and industries involved in non-military applications of nuclear explosives (and their equivalents in other nations) tend to be sanguine about the prospects. Persons whose dominant interest is arms control and the non-proliferation of nuclear weapons tend to give more emphasis to the factors indicating that the economic utility will not be substantial.<sup>66</sup>

The Senate Hearings on the Non-Proliferation Treaty<sup>67</sup> tended to establish that excavation projects using nuclear explosives might be feasible between 1974 and 1979, and peaceful explosions which did not vent would probably be feasible at an earlier date. Thus

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<sup>65</sup> NUCLEAR PROLIFERATION, *supra* note 58 at 99 (chapter by D. Brooks and H. Myers).

<sup>66</sup> *Id.* at 100.

<sup>67</sup> *Nonproliferation Treaty Hearings*, *supra* note 56, at 105, 116, 119.

the Limited Test Ban Treaty could be ratified without a plowshare exception, and amendment of the Treaty could be postponed until, say, 1975. If, however, the Limited Test Ban became unlimited, a plowshare exception would be required immediately.

Nevertheless some knowledgeable proponents of an immediate unlimited test ban, realizing the difficulty of international negotiation of a plowshare exception, have continued to urge an unlimited test ban without a plowshare exception, justifying this course by downgrading the importance and imminence of the "plowshare" program.<sup>68</sup>

It is clear that in the past three years, considerable advances have taken place toward economically feasible nuclear explosions, both underground explosions and cratering explosions. As to the latter, it is believed that devices have been perfected to minimize fallout. Furthermore, the Soviet Union is apparently far advanced in its program to dig a canal reversing the flow of one of the Siberian rivers from the Arctic Ocean to the Caspian Sea. The time is ripe for a "plowshare exception."

The obvious procedure would be amendment of the Limited Test Ban Treaty to permit peaceful explosions and development of the international agreements including safeguards systems, described in Article V of the Non-Proliferation Treaty. The IAEA and U.S. Government have already conducted extensive studies concerning the agreements which may be required.<sup>69</sup>

While an amendment to the Limited Test Ban Treaty to authorize specifically the plowshare exception is obviously the clearest course of action, it is possible to contend that the Non-Proliferation Treaty has already amended the Limited Test Ban Treaty to produce the same results. The Preamble of the Treaty affirms "the principle that the benefits of peaceful applications of nuclear technology including any technological by-products which may be derived by nuclear weapon states from the development of nuclear explosive devices shall be available for peaceful purposes to all parties to the Treaty, whether nuclear weapon or non-nuclear weapon States."

It might be argued that upon completion of the agreements to share the benefits of peaceful explosion and establishment of an international body to deal with the problems, presumably the IAEA itself, all as provided in Article V of the Non-Proliferation Treaty,

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<sup>68</sup> H. J. Scoville, *After SALT, a Total Test Ban*, Washington Post, February 9, 1973.

<sup>69</sup> NUCLEAR PROLIFERATION, *supra* note 58, at 103-115.

peaceful explosions could proceed without a formal amendment of the Limited Test Ban Treaty.

The line of reasoning might be somewhat as follows:

1. Under Article II, 2, the Limited Test Ban can be amended by the majority of votes of all the Parties to the Treaty, including the Original Parties (United States, United Kingdom, U.S.S.R.).

2. The Non-Proliferation Treaty has been ratified by more states than the minimum number required to amend the Limited Test Ban Treaty.

3. The vote in the IAEA approving any plowshare agreements negotiated under Article V of the Non-Proliferation Treaty and setting up IAEA as the agency responsible for carrying out the Agreements would likewise include more than the number of states required to amend the Limited Test Ban Treaty.

4. Thus, any action approved by a sufficient majority of either of these groups would be tantamount to an amendment of the Limited Test Ban Treaty.

5. Therefore, it might be possible to dispense with a formal amendment of the Limited Test Ban Treaty.

This line of reasoning would receive some support from examples cited by Hackworth of termination of a prior treaty by implication because of a subsequent inconsistent treaty obligation.<sup>70</sup> The line of reasoning might conceivably come within one interpretation of the doctrine of *rebus sic stantibus*.<sup>71</sup>

A third theory to justify such a result would be to interpret the term, radioactive debris outside the territorial limits of the State controlling the explosion, to refer only to radioactive debris in such quantities as to constitute a health hazard.<sup>72</sup>

Use of any of these lines of reasoning, however, could create the suspicion that the proponents were first determining the results which they wished to achieve and then finding the legal formula to justify the result; a situation not unknown in either domestic or international law.

## X. ESTIMATE

The Limited Test Ban Treaty has achieved some but not all of the objectives of a complete test ban. Despite continued atmospher-

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<sup>70</sup> G. HACKWORTH, 5 DIGEST OF INT'L LAW 306 (1943).

<sup>71</sup> *Id.* at 349, 354.

<sup>72</sup> Chayes, *An Inquiry into the Working of Arms Control Agreements*, 85 HARV. L. R. 905, 938. Professor Chayes points out (at 919-20) that delays in treaty making might make such an interpretation essential.

ic testing by China and France, the Treaty has curbed the pollution of the atmosphere. Despite the non-adherence by a number of states with potential of developing nuclear weapons systems, only China, which was on the verge of testing its first nuclear weapon at the time of the Treaty, has been added to the nuclear weapon states. Thus the Treaty may have at least delayed the spread of nuclear arms to states not possessing them. The Treaty was never intended to halt the production or reduce the existing stockpile of weapons and, unfortunately, it apparently has not materially curbed the Soviet Union or the United States in expanding and improving their nuclear capabilities. Apparently both the U.S. and Soviet Union in 1963 had been determined to continue underground weapons testing after the Treaty.<sup>73</sup> The U.S. had conducted 246 underground tests since the Treaty and the Soviet Union had presumably conducted 76, as of January 1973.

In sending this Treaty to the Senate, President Kennedy had expressed the hope that it might "reduce world tensions, open the way to further agreements, and thereby help to ease the threat of war."<sup>74</sup> President Kennedy's hopes have been amply realized and this may be the chief achievement of the Treaty. The Treaty showed that it was possible to break the cause of the stalemate which ever since the Second World War had prevented agreements on arms control measures; i.e., the unwillingness of the Soviet Union to accept any substantial on-site inspection behind the Iron Curtain to verify that the Soviet Union was observing its commitments. The Treaty served to focus arms control measures on arms limitations which did not require on-site inspection in order to give reasonable assurance that they were being observed.

The Treaty mechanism of permitting a party to withdraw on 90 days notice if it decided that "extraordinary events related to the subject matter of the Treaty have jeopardized the supreme interest of its country" was an essential ingredient in selling the treaty formula both to the weapons and the non-weapons states. It provided an easy "out" if any of the nuclear weapons states failed to live up to the spirit of the Treaty. At the same time the provision, contrary to prophets of doom at the time of its submission and ratification, has not affected the durability of the Treaty. No state has utilized its right to withdraw.

Perhaps the prime reason for the durability of the Treaty is that

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<sup>73</sup> *Id.* at 931.

<sup>74</sup> *Senate Foreign Relations Committee Hearings, supra* note 4, at 2-4.

the nuclear powers have in fact gone forward towards further agreements to reduce world tensions and ease the threat of war. In the arms control field most of these agreements were patterned on the Limited Nuclear Test Ban Treaty: — the Outer Space Treaty, the Seabed Treaty, the extremely significant Non-Proliferation Treaty and even the initial SALT agreements. They all contained commitments not requiring on-site inspection.

It may be that this momentum towards reduction of international tensions has played some role in the successful efforts toward detente with the Soviet Union and with China. This underlines that the chief importance of the Limited Test Ban Treaty rests not in its commitments and obligations but as a significant event in the international political history of the past decade.