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THE ATOMIC ENERGY COMMISSION

Establishment of the Atomic Energy Commission

When the delegations gathered in London in January 1946 for the first session of the General Assembly, they had before them a request from the five permanent members of the Security Council and Canada to deal with the problems raised by the discovery of atomic energy and the use of atomic weapons. A draft resolution that was the outcome of the meeting of Heads of Government of Canada, the United Kingdom and the United States in Washington in November 1945, and of the Conference of the Foreign Ministers of the United Kingdom, the Soviet Union and the United States in Moscow in December 1945, proposed the establishment of a commission under the United Nations to inquire into and make recommendations about all phases of the problem.

After brief deliberations, the fifty-one members of the General Assembly, on 24 January 1946, unanimously adopted the draft as resolution 1 (I) It reads as follows:

Resolved by the General Assembly of the United Nations to establish a Commission, with the composition and competence set out hereunder, to deal with the problems raised by the discovery of atomic energy and other related matters:

1. Establishment of the Commission

A Commission is, hereby, established by the General Assembly with the terms of reference set out under section 5 below.

2. Relations of the Commission with the Organs of the United Nations

- (a) The Commission shall submit its reports and recommendations to the Security Council, and such reports and recommendations shall be made public unless the Security Council, in the interest of peace and security, otherwise directs. In the appropriate

cases, the Security Council should transmit these reports to the General Assembly and the Members of the United Nations, as well as to the Economic and Social Council and other organs within the framework of the United Nations.

- (b) In view of the Security Council's primary responsibility under the Charter of the United Nations for the maintenance of international peace and security, the Security Council shall issue directions to the Commission in matters affecting security. On these matters the Commission shall be accountable for its work to the Security Council.

3. Composition of the Commission

The commission shall be composed of one representative from each of those States represented on the Security Council, and Canada when that State is not a member of the Security Council. Each representative on the Commission may have such assistance as he may desire.

4. Rules of Procedure

The commission shall have whatever staff it may deem necessary, and shall make recommendations for its rules of procedure to the Security Council, which shall approve them as a procedural matter.

5. Terms of Reference of the Commission

The commission shall proceed with the utmost despatch and enquire into all phases of the problem, and make such recommendations from time to time with respect to them as it finds possible. In particular, the Commission shall make specific proposals:

- (a) for extending between all nations the exchange of basic scientific information for peaceful ends;
- (b) for control of atomic energy to the extent necessary to ensure its use only for peaceful purposes;
- (c) for the elimination from national armaments of atomic weapons and of all other major weapons adaptable to mass destruction;
- (d) for effective safeguards by way of inspection and other means to protect complying States against the hazards of violations and evasions.

The work of the commission should proceed by separate stages, the successful completion of each of which will develop the necessary confidence of the world before the next stage is undertaken.

The commission shall not infringe, upon the responsibilities of any organ of the: United Nations, but should present recommendations for

the consideration of those organs in the performance of their tasks under the terms of the United Nations Charter.

United States Proposals

At the first meeting of the Atomic Energy Commission on 14 June 1946, the representative of the United States, Bernard Baruch, proposed¹ the creation of an International Atomic Development Authority entrusted with all phases of the development and use of atomic energy, including:

1. Managerial control or ownership of all atomic energy activities potentially dangerous to world security.
2. Power to control, inspect, and license all other atomic activities.
3. The duty of fostering the beneficial uses of atomic energy.
4. Research and development responsibilities... intended to put the Authority in the forefront of atomic knowledge and, thus, enable it to comprehend, and therefore to detect, misuse of atomic energy.

The Authority was to conduct continuous surveys of supplies of uranium and thorium and bring the raw materials under its control. It was to possess the exclusive right both to conduct research in the field of atomic explosives and to produce and own fissionable material. All other nuclear activities were to be permitted only under license of the Authority, which would lease, under safeguards, denatured fissionable materials. Dangerous activities of the Authority and its stock piles were to be decentralised and strategically distributed. All nations were to grant the freedom of inspection deemed necessary by the authority. Baruch stressed the importance of immediate punishment for infringements of the rights of the Authority and maintained that: "There must be no veto to protect those who violate their solemn agreements not to develop or use atomic energy for destructive purposes."

Once a system of control and sanctions was effectively operating, further production of atomic weapons would cease, existing stocks would be destroyed and all technological information would be communicated to the Authority.

Soviet Proposals

At the second meeting of the Commission on 19 June 1946, the representative of the USSR, A. Gromyko, submitted a draft convention² prohibiting the production and use of atomic weapons and providing that within three months from its entry into force all atomic weapons were to be destroyed. Violations of the convention were considered to be a serious crime against humanity; severe penalties for violation

were to be provided by domestic legislation; the agreement, of indefinite duration, was to come into force after approval by the Security Council and ratification by the Council's permanent members; and all States, whether or not members of the United Nations, would be required to fulfil all provisions of the agreement. Gromyko also proposed that the convention should be followed by other measures to control observance of it and to decide on sanctions to be applied against the unlawful use of atomic energy.

The work of the commission was carried on in committees and sub-committees, of which the most important were: Committee 1, which studied all proposals and prepared a plan of work for the Commission; Committee 2, which dealt with specific questions of the control of atomic energy; a Legal Advisory Committee; and a Scientific and Technical Committee.

While the Atomic Energy Commission was carrying on its work, the General Assembly, on 14 December 1946, unanimously approved resolution 41 (I) on the principles governing the general regulation and reduction of armaments. The resolution urged "the expeditious fulfilment by the Atomic Energy Commission of its terms of reference" and recommended that the Security Council expedite consideration of a draft convention for the creation of an international system of control and inspection and for the prohibition of atomic and all other major weapons of mass destruction so as to ensure the use of atomic energy only for peaceful purposes.

First Report of the Atomic Energy Commission

The commission's first report to the Security Council,³ which of the was adopted by the Commission on 30 December 1946 by 10 votes to none, with 2 abstentions (Poland and the USSR), stated in its general findings that scientifically; technologically and practically it was feasible: "(a) to extend among all nations the exchange of basic scientific information on atomic energy for peaceful ends; (b) to control atomic energy to the extent necessary to ensure its use only for peaceful purposes; (c) to accomplish the elimination from national armaments of atomic weapons; and (d) to provide effective safeguards by way of inspection and other means to protect complying States against the hazards of violations and evasions".

It also stated that "an effective system for the control of atomic energy must be international, and must be established by an enforceable multilateral treaty or convention which, in turn, must be administered

and operated by an international organ or agency within the United Nations” and that “international agreement to outlaw the national production, possession and use of atomic weapons is an essential part of any such international system of control and inspection” but not sufficient “to ensure the use of atomic energy only for peaceful purposes” or “to provide for effective safeguards... to protect complying States against the hazards of violations and evasions”.

On the basis of its findings, the commission recommended the creation of a strong and comprehensive international system of control and inspection by a treaty or convention in which all members of the United Nations would participate on fair and equitable terms. This treaty, it was urged, should include provisions establishing an international authority possessing the power and responsibility necessary and appropriate for the prompt and effective discharge of the duties imposed, upon it by the terms of the treaty or convention. The rule of unanimity of the permanent members which governed all substantive decisions of the Security Council was not to obstruct control or inspection or to protect a violator.

At a meeting of the Security Council on 18 February 1947, the Soviet Union submitted a number of amendments and additions⁴ to the general findings and recommendations contained in the first report. The Soviet Union proposed that inspection, supervision and management by an international agency should apply to all existing atomic plants immediately after the entry into force of an appropriate convention or conventions and that an effective international system of control of atomic energy should be administered and enforced within the framework of the Security Council. It also proposed the destruction of stocks of manufactured and unfinished atomic weapons. While decisions in the control organs were to be taken by a majority vote, under the amendments the commission’s recommendations regarding the veto would be eliminated.

On 10 March 1947, the Security Council unanimously adopted a United States draft resolution which urged the commission to continue its inquiry into all phases of the problem of the international control of atomic energy.⁵

Summary of the Two Positions

The intensive activity of the commission during 1947 began with a detailed discussion of the USSR amendments and additions to the Commission’s first report, but divergencies between the two proposals

remained concerning: the stage at which atomic weapons should be prohibited and international control established; the principle of international ownership or control of all phases of atomic energy activities, including research; and the application of the principle of unanimity in the Security Council when violations of an agreement were before it.

The original proposal of the United States had been developed and elaborated in several memoranda, submitted to the commission in July 1946, in which the International Atomic Development Authority's functions and powers were explained at some length. The USSR, in 1947, supplemented its draft convention on the prohibition of atomic weapons with basic provisions on which an international agreement or convention on atomic energy control should be based.

United States Position

According to the United States memoranda,⁶ the functions and powers of the Authority were to include complete and exclusive control or ownership of all uranium, thorium and other source material wherever present in potentially dangerous quantities, and the ownership and exclusive operation of all facilities for the production of U-235, plutonium and such other fissionable materials as might be specified.

The memoranda noted that the question of control and development of atomic energy could not have been considered or dealt with in the framing of the United Nations Charter, which had been signed before the first atomic explosion. The United States, therefore, considered that a new agency, rather than a subsidiary organ, was necessary, as the latter would not have adequate powers under the Charter. Moreover, the Authority was to be non-political, though its decisions were to have a considerable degree of finality, especially on matters not of sufficient gravity to constitute a threat to the peace.

While the General Assembly was to receive reports from the Authority and have the right to make recommendations, the United States considered that when important features of the control of atomic energy were intimately associated with the maintenance of peace and security, the Authority and the Security Council had to be brought into close relationship:

In the event of an occurrence within the area of the Authority's jurisdiction constituting a threat to the peace, breach of the peace or act of aggression, such occurrence should immediately be certified by the Authority to the Security Council, the Assembly, and the signatory States. The treaty

should establish this category of offences and the conditions surrounding them. For the purpose of illustration, they might include violations... such as:

- (a) Illegal possession or use of an atomic bomb;
- (b) Illegal possession, or separation, of atomic material suitable for use in an atomic bomb;
- (c) Seizure of any plant or other property belonging to, or licensed by, the Authority;
- (d) Wilful interference with the activities of the Authority;
- (e) Creation or operation of dangerous projects in a manner contrary to, or in the absence of, a license granted by the Authority.

It was argued that the controls established by the treaty would be wholly ineffectual if in any such situations, to be defined in the treaty, the enforcement of security provisions could be prevented by the vote of a State which had signed the treaty. The provisions of Article 51 of the Charter would be applicable in certain cases:

Interpreting its provisions with respect to atomic energy matters, it is clear that if atomic weapons were employed as part of an "armed attack," the rights reserved by the nations to themselves under Article 51 would be applicable. It is equally clear that an "armed attack" is now something entirely different from what it was prior to the discovery of atomic weapons. It would, therefore, seem to be both important and appropriate under present conditions that the treaty define "armed attack" in a manner appropriate to atomic weapons and include in the definition not simply the actual dropping of an atomic bomb, but also certain steps in themselves preliminary to such action.

Soviet Position

The Soviet Union maintained⁷ that the proposed functions and powers for the Authority would lead to interference by the control organs in the most varied fields of the life of a State. It invoked the history of the unanimity rule, especially the United States position at Dumbarton Oaks and San Francisco, when dealing with the role of the Security Council:

The Soviet delegation considers that it will be impossible to reach an agreement on this question so long as the unacceptable proposal on the question of the so-called veto is defended, since such a proposal is in contradiction with the principles of the United Nations... All agree that certain sanctions should be applied against violators, if their guilt is proved. There is a divergence of opinion as to how, and by whom,

decisions on sanctions should be taken. Should such decisions be taken in accordance with the basic principles of the United Nations, or in violation of those principles? The Soviet delegation considers that such decisions should be taken in strict conformity with the basic principles of our organisation and should be taken by the organ which is charged with the primary responsibility for the maintenance of peace, that is, by the Security Council.

The Soviet proposals for atomic energy control,⁸ based on the objectives of the draft convention for the prohibition of atomic weapons, included the following:

1...

2. To carry out measures of control of atomic energy facilities, there shall be established within the framework of the Security Council an international commission for atomic energy control, to be called the International Control Commission.

3. The International Control Commission shall have its own machinery for inspection.

4. The terms and organisational principles of the international control of atomic energy, and also the composition, rights and obligations of the International Control Commission, as well as provisions on the basis of which it shall carry out its activities, shall be determined by a special international convention on atomic energy control, which is to be concluded in accordance with the convention on the prohibition of atomic weapons.

5. In order to ensure the effectiveness of international control of atomic energy, the convention on the control of atomic energy shall be based on the following fundamental provisions:

- (a) The International Control Commission shall be composed of the representatives of States members of the Atomic Energy Commission established by the General Assembly decision of 24 January 1946, and may create such subsidiary organs as it finds necessary for the fulfilment of its functions;
- (b) The International Control Commission shall establish its own rules of procedure;
- (c) The personnel of the International Control Commission shall be selected on an international basis;
- (d) The International Control Commission shall periodically carry out inspection of facilities for the mining of atomic raw materials, and for the production of atomic materials and atomic energy.

6. In carrying out the inspection of atomic energy facilities, the International Control Commission shall undertake the following measures:

- (a) Investigate the activities of facilities for mining atomic raw materials, for the production of atomic materials and atomic energy, and check their accounts;...
- (f) Carry out special investigation in cases where suspicion of violations of the convention on the prohibition of atomic weapons arises;...
- (h) Make recommendations to the Security Council on measures for prevention and suppression with regard to violators of the conventions on the prohibition of atomic weapons and on the control of atomic energy.

7. For the fulfilment of the tasks of control and inspection entrusted to the International Control Commission, the latter shall have the right of:

- (a) Access to any facilities for mining, production and stockpiling of atomic raw materials and atomic materials, as well as to the facilities for the exploitation of atomic energy;...
- (d) Requesting from the Government of any nation, and checking, various data and reports on the activities of atomic energy facilities;...
- (g) Submitting recommendations for the consideration of the Security Council on measures in regard to violators of the conventions on the prohibition of atomic weapons and on the control of atomic energy.

Second Report of the Atomic Energy Commission

The commission, in its second report,⁹ adopted on 11 September 1947 by 10 votes to 1 (USSR), with 1 abstention (Poland), noted that the discussion of the Soviet proposals had not led to a reconciliation of views on major points of principle. Part II of the report, dealing with the functions and powers of an international agency for the control of atomic energy, endorsed certain basic principles, including the following:

1. Decisions concerning the production and use of atomic energy should not be left in the hands of nations.
2. Policies concerning the production and use of atomic energy which substantially affect world security should be governed by principles established in the treaty or convention which the agency would be obligated to carry out.

3. Nations must undertake in the treaty or convention to grant to the agency rights of inspection of any part of their territory, subject to appropriate procedural requirements and limitations.

For implementing these principles, the following basic measures were provided:

- (a) Production quotas based on principles and policies specified in the treaty or convention;
- (b) Ownership by the agency of nuclear fuel and source material;
- (c) Ownership, management and operation by the agency of dangerous facilities;
- (d) Licensing by the agency of non-dangerous facilities to be operated by nations; and
- (e) Inspection by the agency to prevent or detect clandestine activities.

The report stated further that:

The majority of the Commission concludes that the specific proposals of this report which define the functions and powers of an international agency, taken together with the general findings and recommendations of the first report, provide the essential basis for the establishment of an effective system of control to ensure the use of atomic energy for peaceful purposes only and to protect complying States against the hazards of violations and evasions.

Concerning the subjects which were not dealt with in the second report (i.e., the organisation and administration of the agency, the stages of transition to a system of international control, geographical location of dangerous activities and stockpiling, financial and budgetary organisation, prohibitions and enforcement), the majority of the Atomic Energy Commission expressed the view that these could "for the most part be discussed effectively only within the framework of conclusions reached with regard to the functions and powers of the international agency" and that "until unanimous agreement is reached on the functions and powers of the international agency, there will be limitations on the extent to which proposals on other topics... can be worked out in detail."

Impasse in the Commission

During 1948, the commission continued to consider the Soviet proposals. The commission's third report,¹⁰ which was adopted on 17

May 1948 by a vote of 9 to 2 (Ukrainian SSR and USSR), contained the majority plan of control and the Soviet proposals. It explicitly noted that the Commission had reached an impasse and, therefore, could not prepare a draft treaty on the control of atomic energy. The difficulties, according to the report, were first evidenced when the plan for the control of atomic energy was rejected by the Soviet Union on the grounds that it was an unwarranted infringement of national sovereignty. The Soviet Union held that a convention outlawing atomic weapons and providing for the destruction of existing weapons must precede any control agreement, because the prohibition of atomic weapons would be the only valid reason for the establishment of a control system. The majority of the Commission, on the other hand, considered that such a convention, without safeguards, would offer no protection against non-compliance.

The Commission, therefore, recommended that negotiations, on the Commission level, be suspended until such time as the permanent members of the Commission (Canada, China, France, the USSR, the United Kingdom and the United States) found, through prior consultations, that there existed a basis for agreement on international control. It asked the Security Council to transmit its third report, together with the two earlier reports, to the General Assembly as a matter of special concern.

A statement of the USSR was included, which declared that the first step in the international control of atomic energy should be the outlawing of atomic weapons and their exclusion from national armaments and that the Soviet Union could not agree to a plan which, on the pretext of establishing international control, enabled countries to interfere in the internal economic life of other States. According to the USSR, the problem was essentially political and therefore the tendency to subordinate the political tasks of control to technical considerations threatened the whole establishment of such control.

When the Security Council considered this report in June 1948,¹¹ the members reiterated their positions. The United States submitted a draft resolution¹² to approve certain parts of the first and second reports as well as the third report and its recommendations. The vote was 9 in favour and 2 against (Ukrainian SSR and USSR), and, thus, the draft resolution was not adopted since one of the negative votes was cast by a permanent member. The Council then adopted, by a vote of 9 to 0, with 2 abstentions (Ukrainian SSR and USSR), a Canadian draft resolution merely transmitting the reports to the General Assembly.¹³

Consideration by the General Assembly 1948

When the General Assembly took up the question at its third session, a sub-committee of the First Committee attempted to reconcile three main draft resolutions submitted by Canada, India and the USSR.¹⁴ The Canadian draft¹⁵ was similar to the United States draft resolution already rejected by the Security Council (*see preceding paragraph*). The Indian draft resolution¹⁶ would also have approved the reports but would have added a call to continue work on a draft treaty — a position unacceptable to the Commission's majority in the absence of a basis of agreement. The USSR draft resolution¹⁷ would have directed the Commission to prepare a draft convention on the prohibition of atomic weapons and a draft convention on the establishment of effective international control over atomic energy, both conventions to be signed and brought into operation simultaneously.

In the course of the discussion in the First Committee, most delegations favoured further efforts by the Commission—a point subsequently included in the revision of the Canadian draft. Those opposed to the Canadian draft, including Czechoslovakia, Poland, the USSR and Yugoslavia, contended that endorsement of the majority proposals would guarantee a monopoly of atomic weapons for the United States. The United Kingdom observed that the principle of simultaneous conventions might be acceptable, provided it was understood that the convention on prohibitions would come into effect only after an effective control scheme had been made operative. The United States opposed the USSR draft resolution, maintaining that it departed from the principle of effective international control. Brazil, El Salvador and South Africa, countries possessing ores containing atomic energy source materials, referred to the possible difficulties arising from any effort to transfer ownership to an international agency.

On 4 November 1948, the General Assembly rejected the USSR draft resolution by 40 votes to 6, with 5 abstentions, and then adopted the Canadian draft resolution, as revised, by 40 votes to 6, with 4 abstentions, as resolution 191 (III).¹⁸ It reads as follows:

The General Assembly,

Having examined the first, second and third reports of the Atomic Energy Commission, which have been transmitted to it by the Security Council in accordance with the terms of General Assembly resolution 1 (I) of 24 January 1946,

1. Approves the general findings (part II C) and recommendations (part III) of the first report and the specific proposals of part II of the second report of the Commission as constituting the necessary basis for establishing an effective system of international control of atomic energy to ensure its use only for peaceful purposes and for the elimination from national armaments of atomic weapons in accordance with the terms of reference of the Atomic Energy Commission;

2. *Expresses* its deep concern at the impasse which has been reached in the work of the Atomic Energy Commission, as shown in its third report, and regrets that unanimous agreement has not yet been reached;

3. *Requests* the six sponsors of the General Assembly resolution of 24 January 1946, which are the permanent members of the Atomic Energy Commission, to meet together and consult in order to determine if there exists a basis for agreement on the international control of atomic energy to ensure its use only for peaceful purposes and for the elimination from national armaments of atomic weapons, and to report to the General Assembly the results of their consultation not later than its next regular session;

4. *Meanwhile,*

The General Assembly

Calls upon the Atomic Energy Commission to resume its sessions, to survey its programme of work, and to proceed to the further study of such of the subjects remaining in the programme of work as it considers to be practicable and useful.

Commission Dissolved

After another round of talks during 1949, the Atomic Energy Commission reported to the Security Council that the impasse continued and the differences were irreconcilable. Further discussion, the Commission stated, would only tend to harden differences and would serve no practicable or useful purpose until such time as the permanent members of the Commission had reported that there existed a basis for agreement. The Council, on 16 September 1949, adopted a resolution¹⁹ which directed the Secretary-General to transmit the Commission's conclusions to the General Assembly. A Soviet proposal requesting the Commission to continue its work was rejected.

As the fourth session of the General Assembly got under way in September 1949, the United States announced that the Soviet Union

had exploded an atomic bomb, thus, becoming the second nuclear power. At the time, consultations were in progress among the six permanent members of the Commission in a last effort to bring about agreement,* but these too failed.

The Assembly, by resolution 299 (IV), which was adopted on 23 November 1949, requested the six permanent members of the Atomic Energy Commission to continue consultations to explore all possible avenues and examine concrete suggestions and to keep the Commission and the General Assembly informed of their progress.

The consultations of the six powers were resumed in December 1949, and various concrete suggestions made in the course of the Assembly's debate or submitted to the six powers were added to the agenda. On 19 January 1950, the USSR representative proposed that the representative of China, whom he termed the "representative of the Kuomintang group", be excluded from the consultations. The proposal having been rejected, the Soviet representative withdrew from the consultations.**

The Atomic Energy Commission did not meet again after 29 July 1949, nor did the six powers after the withdrawal of the Soviet Union. The Commission was dissolved on 11 January 1952 by General Assembly resolution 502 (VI), which created the Disarmament Commission (*see page 41*).

REFERENCES

1. *Official Records of the Atomic Energy Commission, First Year, No. 1*, 1st meeting, p. 7.
2. *Ibid.*, No. 2, 2nd meeting, pp. 26-28.
3. *Ibid.*, *Special Supplement* and No. 10, 10th meeting.
4. *Official Records of the Security Council, Second Year, No. 15*, 108th meeting and *Supplement No. 7*, annex 16 (document S/283).
5. *Resolutions and Decisions of the Security Council, 1947*, resolution 20 (1947) of 10 March 1947 (S/296).

* See statement by the representatives of Canada, China, France, the United Kingdom and the United States on the consultations of the six permanent members of the Atomic Energy Commission, in *Official Records of the General Assembly, Fourth Session, Supplement No 15* (A/1050).

** The circumstances leading to the suspension of the six-power consultations are described in *Official Records of the General Assembly Fifth Session, Annexes*, agenda item 26, documents A/1253 and A/1254.

6. *Official Records of the Atomic Energy Commission, First Year, Special Supplement*, annex 4, pp. 92-102, 106-111.
7. *Official Records of the Security Council, Second Year, No. 22*, 115th meeting, p. 455.
8. *Official Records of the Atomic Energy Commission, Second Year, No. 2*, 12th meeting, pp. 21-24 (AEC/24).
9. *Ibid.*, *Second Year, Special Supplement* and No. 4, 14th meeting.
10. *Ibid.*, *Third Year, Special Supplement*.
11. *Official Records of the Security Council, Third Year, No. 83*, 318th meeting; No. 85, 321st meeting; and No. 88, 325th meeting.
12. *Ibid.*, No. 83, 318th meeting (document S/836).
13. *Resolutions and Decisions of the Security Council, 1948,* resolution 52 (1948) of 22 June 1948 (S/852).
14. *Official Records of the General Assembly, Third Session. Part I, Plenary Meetings,, 144th meeting..*
15. *Ibid.*, *First Committee, Annexes*, document A/C.1/308.
16. *Ibid.*, document A/C.1/315.
17. *Ibid.*, document A/C. 1/310.
18. *Ibid.*, *Plenary Meetings*, 157th meeting.
19. *Resolutions and Decisions of the Security Council, 1949*, resolution 74 (1949); of 16 September 1949 (S/1393), and *Official Records of the Security Council, Fourth Year, No. 43*, 447th meeting.

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RADIATION—A FACT OF LIFE

Man has always been subjected to natural radiation. He is exposed to radiation from the sun and outer space; naturally occurring radioactive materials are present in the earth, in the structures we inhabit, and in the food and water we consume. There are radioactive gases in the air we breathe and our bodies are themselves radioactive. The levels of this natural radiation vary greatly from location to location.

In addition to natural radiation, man is exposed to sources of radiation that he himself created. X-rays and other kinds of radiation used for medical purposes, fall-out from nuclear explosives testing and radioactive materials released in the course of nuclear power production are some examples. Within a decade after X-rays came into use in the late 1890's, it became apparent that this type of radiation could be either beneficial or harmful depending on its use and control, and that protection measures were necessary. In succeeding years it was realised that this also applies to some other kinds of radiation.

Types of Radiation

Although the term "radiation" is very broad and includes such things as light and radio waves, it is most often used to mean "ionizing" radiation, which is radiation that can produce charged particles ("ions") in materials that it strikes. This is true for inanimate as well as living matter; ionizing radiation then can represent a health hazard to man.

There are various types of ionizing radiation: alpha, beta and gamma radiation, X-rays and neutrons, each with different characteristics. Atoms that emit these kinds of radiation are said to be radioactive.

Alpha radiation

Consists of positively charged particles and is emitted from naturally occurring elements such as uranium and radium as well as from man-

made elements. Alpha radiation will just penetrate the surface of the skin; it can be stopped completely by a sheet of paper. However, the potential hazard that alpha-emitting materials present is due to the possibility of their being taken into the body by inhalation or along with food or water.

Beta radiation

Consists of electrons. It is more penetrating than alpha radiation and can pass through 1-2 centimetres of water or human flesh. A sheet of aluminium a few millimetres thick can stop beta radiation. Tritium, one of the materials present in fall-out from nuclear explosives tests, emits beta radiation.

Gamma radiation

Can be very penetrating. It can pass right through the human body but would be almost completely absorbed by one metre of concrete. Dense materials such as concrete and lead are often used to provide shielding against gamma radiation.

X-rays

Are a more familiar form of penetrating radiation.

Neutrons

Can also be very penetrating. They are rarely detected at locations near sea level but are present at greater altitudes. Neutron radiation occurs inside nuclear reactors but efficient shielding against neutrons can be provided by, for example, water.

What is Meant by Radiation Dose?

To be exposed to radiation, i.e. to absorb some radiation energy, is to receive a radiation dose. However, as in the case of coffee, brandy or medicine the possible effects can be best evaluated when the quantity of radiation, the rate at which it was received and the manner in which it was received are known. For example, a single glass of whisky can be drunk and no significant side effects experienced. But, what effect would drinking ten glasses have? Among other things, one would need to know whether they were drunk over 20 minutes or 20 days. Radiation dose to individuals is usually expressed in “rem” (or “millirem”, i.e. thousandths of a rem)¹. The rate is then expressed as millirem per hour, per year, etc. As an example, one chest X-ray is equivalent to about 20 millirem.

By comparison, the average dose received from other sources of radiation can vary considerably.

We are exposed to natural ionizing radiation in two ways:

1. Cosmic rays (originating in outer space) and radioactive materials that occur naturally in the earth's crust, result in an external exposure (i.e. from radiation sources that are outside the body). The average radiation dose we receive from these sources varies from place to place:

New York	100 mrem
London	100 mrem
Paris	120 mrem
Denver	125 mrem
Kerala, India about	400 mrem

2. Naturally occurring radioactive elements are taken into—our bodies in food and water, or are inhaled, and result in an internal exposure.

On average, we receive over 100 millirem each year from these natural sources. This number fluctuates depending on local conditions.

We receive some dose of radiation depending on how we live. Houses constructed of bricks, concrete and wood give their inhabitants different amounts of radiation. Dental and other medical X-rays, industrial uses of radiation, watches with luminous dials containing radium, colour television sets, and living in the general vicinity of a nuclear reactor add varying amounts to our radiation dose.

When Did Radiation Protection Begin?

As radiation came to be more and more widely used, for example by doctors, the need to regulate radiation doses became apparent. In 1928 the International Commission on Radiological Protection (ICRP), an independent non-governmental expert body, was established to recommend the maximum radiation doses to which people could be safely exposed. Its members are chosen on the basis of their individual merit in the fields of medical radiology, radiation protection, physics, health physics, biology, genetics, biochemistry and biophysics, with regard to an appropriate balance of expertise rather than to nationality. The recommendations of the ICRP have been universally accepted for the last 50 years by both national and international bodies responsible for radiation protection.

What are the Being Protected Against?

In the extreme case, exposure of the whole body to very high levels of radiation over a short period (e.g. 3000-4000 times the annual background dose at once) is fatal. At lower doses, radiation exposure results in some likelihood of developing cancer and leukaemia and this likelihood decreases in proportion to the dose. Doses resulting from natural radiation produce a very small fraction of the number of recorded cancer cases. This property of inducing cancer, called "carcenogenicity", is one that radiation shares with a large number of chemicals and other materials, both natural and man-made. Examples of these are asbestos, vinyl monomar, many pesticides, and some components of tobacco smoke. Exposure to radiation as well as to certain chemicals may also cause genetic defects that could appear in future generations.

The two objectives then of radiation protection, as stated by the ICRP, are:

1. To prevent acute radiation effects.
2. To limit the risks of cancer and genetic defects.

To reach these objectives the ICRP has laid out recommendations that are guided by three general principles:

1. No practice shall be adopted unless its introduction produces a net positive benefit.
2. All exposures to radiation shall be kept as low as reasonably achievable, economic and social factors being taken into account.
3. Those who are exposed to radiation in the course of their occupation (e.g. X-ray technicians) shall not receive a dose greater than 5000 mrem per year. For a member of the public, this dose shall not exceed 500 mrem per year nor a lifetime average of 100 millirem per year.

The radiation exposure limits set by the ICRP are intended to be maximum values which must not be exceeded. In accepting the ICRP's recommendations, it is common practice for countries to regulate limits lower than those given in the recommendations. In addition, practices in the nuclear industry, for example, result in doses, even to local populations, that are in turn a small fraction of these regulated limits.

The ICRP also makes the prudent assumption that there are health effects, varying directly with the dose received, right down to zero dose. Zero dose is however, an ideal that cannot be reached because

we can never avoid all natural radiation. The ICRP recommendations do not apply to radiation doses received from natural background radiation or from medical diagnoses (e.g. X-rays) or treatments; they do cover those from all other sources.

Radiation at Low Doses

Radiation at low doses, referred to as “low-level radiation”, results in some damage to living tissues. However, the body does have mechanisms to repair this type of damage thus providing a certain level of protection against such radiation effects.

Recently, some scientists have claimed that the risks of low-level radiation have been underestimated, and that at low dose rates the assumed relationship between dose and effects does not err on the safe side. Although these views meet with general disagreement from the majority of the scientists who have studied this question*, a thorough debate is still underway. This important point will be discussed in detail in a separate IAEA publication.

Work of the IAEA

One of the objectives of the International Atomic Energy Agency (IAEA) is to “seek to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world”; this mandate brings with it a responsibility for protecting man and his environment from the harmful effects of ionizing radiation. Since its formation in 1957, the IAEA has made safety a central issue and it has remained an integral part of the Agency’s programmes. These include, for example, those programmes dealing with radiation and human health, basic safety standards for radiation protection, the safe handling

* For example, the ICRP, already mentioned, the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) and the Committee on the Biological Effects of Ionizing Radiation (BEIR).

UNSCEAR was established in 1955 by the United Nations General Assembly as a result of international concern about the effects of fall out from the testing of nuclear explosives. It was directed to assemble, study and disseminate information on observed levels of ionizing radiation and radioactivity (both natural and man-made) in the environment and on the effects of such radiation on man and his environment. UNSCEAR’s most recent report was published in 1977.

The BEIR Committee was established by the Division of Medical Sciences of the U.S. National Research Council and includes eminent American scientists as well as those from other countries.

of radiation and radioactive materials in the workplace, environmental surveillance, regulations for the safe transport of radioactive materials, and training in radiological protection. Based on the ICRP recommendations and in consultation with the World Health Organisation (WHO), the International Labour Office (ILO), and other bodies, the IAEA prepares Basic Safety Standards for Radiation Protection which serve as a reference for national legislation. Revised ICRP recommendations were issued in 1977 and the IAEA's safety standards are being revised and updated to conform with these new recommendations.

Benefits of Radiation

The uses of radiation have brought tremendous benefits to our everyday lives during the past 20 or 30 years. Radioisotopes and controlled radiation are used, for example, to sterilize medical supplies, to improve the keeping qualities of foodstuffs (e.g. onions, potatoes), in industrial processes and in medical science, in the study of the environment and of environmental pollution, in agriculture and in hydrology. These benefits are largely taken for granted if they are realised at all.

Medical diagnosis and treatment is the main source of public exposure to man-made radiation but the benefit in terms of human lives and health is enormous.

Radiation is a major tool in the treatment of certain kinds of cancer. Irradiating tissues affected by a tumour has proven effective in inhibiting the tumour's growth or in destroying it.

Radioisotopes play an essential part in some medical diagnostic procedures. Together with improved imaging devices and computers, radioisotopes can be used to assess the condition and functioning of various body organs such as the heart, lung, brain, liver and kidney. Without radioisotopes these assessments would be difficult or impossible.

The use of radiation to sterilize medical products, such as surgical dressings, sutures, catheters, spare body parts, syringes, etc. is now a normal procedure. Radiation does not introduce undesirable residues whereas sterilisation by chemicals or gases may. Many of these products are difficult to sterilize by heat or steam.

In addition, since gamma radiation penetrates the packaging, items to be sterilised can be packed in hermetically sealed packaging prior to sterilisation. Since it is a "cold" process, sterilisation using radiation can be applied to heat-sensitive materials, such as plastics (for example, heart valves) and appears to be the only means of sterilising a number

of heat-sensitive pharmaceutical items such as powders, ointments and solutions.

Risk

Today we are much more conscious of risks than people were 25 or even five years ago. This is partly because of better education, partly because the applications of science and technology have brought with them new and sometimes imperfectly understood risks, but also partly because of the speed with which news can be brought to our attention. It is not the scale of today's disasters, such as millions of gallons of oil polluting beaches, or hundreds of deaths in a single aviation accident, that makes the difference. After all, in the 14th century the Black Death killed some 25 million people in six years and the Great Plague of 1665 wiped out 20% of the population of London. More recently, the influenza pandemic of 1918 killed more than 20 million people.

What does make the difference is the speed with which information about such events is now disseminated around the world. We can learn about them within minutes of their having taken place. However, we must often rely on the interpretations of people who may be thousands of miles from the scene and are just commenting on what they have heard. Radiation and the risks of radiation command considerable public attention. However, it is not generally realised that safety regulations are much stricter for radioactive materials than for other dangerous substances. For example, nuclear power stations emit radioactive materials; oil- and coal-fired power stations discharge sulphur dioxide (as much as 20 000 to 30 000 tonnes per year from a single large power plant). But in terms of the corresponding lethal doses of these radioactive materials and of sulphur dioxide, the emission limits for nuclear power stations are 100 times lower than they are for oil- or coal-fired stations. This is only one facet of air pollution and air pollution in turn is only one factor to be considered in determining the relative merits of different energy sources.

Furthermore, in the case of coal, it has been estimated that in Pennsylvania 30 000 miners died in the mines between 1870 and 1950 – an average of about one man a day for 80 years. Next to such appalling tolls, the safety history of the nuclear power industry is uniquely encouraging. Radioactive elements gradually lose their radioactivity – and their toxicity – with time. Other non-radioactive materials (for example, arsenic) remain toxic forever. It has recently been reported by the director of the Mario Negri Research Institute in Milan, that three years after the accidental chemical release in Seveso,

Italy, in July 1976, there is still no sign that the toxicity of the dioxin deposited in the region is diminishing. Illustrative examples such as this one demonstrate how radiation risks tend to be viewed separately from other, and sometimes greater, risks.

Summary

- Radiation has always been a part of the natural environment and a large part of the radiation dose we receive naturally is unavoidable.
- The effects of radiation on human health are not unique; many natural and man-made materials can produce similar effects.
- The effects of radiation are better known than those of practically all other harmful agents and the regulations and monitoring measures to protect us against these effects are more complete and more advanced.
- The benefits of radiation and radioactive materials, in their various uses, greatly outweigh the risks.
- The nuclear power industry is a very minor contributor to our total radiation dose.

REFERENCES

1. More correctly, “millirem” and “rem” refer to the “radiation dose equivalent”, and they have been devised to take into account the different biological effects of different types of ionizing radiation on people.

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EARLY INITIATIVES, 1954-1958

It was in 1954, that suggestions were first made that an agreement to ban the testing of nuclear weapons could be considered on its own merits, either as an independent measure or as one item in an agreement on more comprehensive forms of disarmament. In 1963, the lengthy negotiations culminated in the signing, at Moscow on 5 August, of the treaty banning nuclear weapon tests in the atmosphere, in outer space and under water. Negotiations to ban underground tests continue.

The United States had exploded the world's first thermonuclear device in October 1952, and the Soviet Union had ' conducted a similar experiment in August 1953. On 1 March 1954, a particularly noted United States thermo-nuclear test on the Bikini Atoll was reported to have had a yield of 15 megatons. Fall-out from this test was unexpectedly widespread, and affected in particular the crew of the Japanese fishing boat *Fukurya Maru*.

Indian Proposal for Standstill Agreement

In a letter to the Secretary-General on 8 April 1954,¹ the Indian representative drew attention to a statement made by the Prime Minister of India, Jawaharlal Nehru, on 2 April. Nehru had said:

Pending progress towards some solution, full or partial, in respect of prohibition and elimination of these weapons of mass destruction, which the General Assembly has affirmed as its earnest desire, the Government would consider among the steps to be taken, now and forthwith, the following:

(1) Some sort of what may be called "Standstill Agreement" in respect, at least, of these actual explosions, even if arrangements about the discontinuance of production and stockpiling must await more substantial agreements among those principally concerned...

In his letter, the Indian representative requested that the views of his Government on this subject be placed before the Disarmament Commission and its Sub-Committee. The Indian Government believed that these proposals were practical and “capable of application without prejudice to any of the issues in regard to control, inspection, prohibition, stockpiling, etc., which the Commission is seeking to resolve”.

The proposals were not in fact discussed in the Disarmament Commission or its Sub-Committee in 1954, and India requested that they be communicated to the General Assembly in connexion with the report of the Disarmament Commission. In the General Assembly, on 1 October 1954, Burma called for an agreement on the “cessation of all further experiments designed to produce bigger and better thermo-nuclear and atomic weapons” and said that control of such an undertaking would present no problems, as thermo-nuclear weapon tests could readily be detected.² India recalled its proposals for a “standstill arrangement” for explosions, although the arrangement could apply to all aspects of thermo-nuclear weapons pending the outcome of current discussions.³

Soviet Proposal

In 1955, too, there was no active discussion in the five-power Sub-Committee of the Disarmament Commission of a nuclear test as a separate subject, although the Soviet Union’s proposal of 10 May 1955⁴ for a convention on the reduction of armaments and the prohibition of atomic weapons included the following:

As one of the first measures for the execution of the programme for the reduction of armaments and the prohibition of atomic weapons, States possessing atomic and hydrogen weapons shall undertake to discontinue tests of these weapons.

With a view to supervision of the fulfilment by States of the aforementioned obligation, an international commission shall be set up which shall submit reports to the Security Council and the General Assembly...

The Soviet Prime Minister, Bulganin, included the first paragraph of the above in the proposal he submitted on 21 July 1955 at the Geneva Summit Conference.⁵

Consideration by the General Assembly 1955

On 1 December 1955, at the tenth session of the General Assembly, India introduced a draft resolution in the First Committee whereby

the Assembly would request "all the States concerned to initiate negotiations to effect suspension of experimental explosions of nuclear and thermo-nuclear weapons and to report progress to the Disarmament Commission at an early date". India did not, however, insist on the suggestion being put to the vote. The United States said that if agreement could be reached to eliminate nuclear weapons in the framework of an effective system of disarmament under proper safeguards, there would be corresponding restrictions on the testing of such weapons. India stressed the need for immediate negotiations among the nuclear Powers with a view to suspending experimental explosions of nuclear and thermonuclear weapons.

Resolution 914 (X), adopted by the General Assembly on 16 December 1955, contained the suggestion "that account should also be taken of the proposals... of the Government of India regarding the suspension of experimental explosions of nuclear weapons and an 'armaments truce'".

Resolution on Effects of Atomic Radiation

At the Assembly's tenth session, India also proposed consideration of the question of "Dissemination of information on the effects of atomic radiation and on the effects of experimental explosions of thermo-nuclear bombs",⁶ stating, *inter alia*, that:

The way in which radio-active material produced in the tests of nuclear and thermo-nuclear weapons is dissipated over the world is not yet fully known. There is a marked divergence of opinion among scientists as to the long-term consequences of detonating nuclear and thermo-nuclear bombs for experimental purposes, more particularly with regard to the genetic effects. While almost all are agreed that ultimately the background radiation could increase to a level which would endanger the existence of mankind, many consider that a stage has already been reached when further experimental explosions of atomic weapons may have disastrous results for the entire human species some hundreds of years hence.

Since all nations of the world, and not merely the nations conducting the experiments, may suffer as a result of the after-effects of tests of nuclear and thermo-nuclear bombs and other activities undertaken by various countries for the development of atomic energy, the Government of India considers that it is essential to set up immediately an international organisation which will collect and co-ordinate the data on the immediate and long-term consequences of nuclear radiation as well as the known effects of experimental explosions of the hydrogen and nuclear bombs, and inform the world of the same.

As an amendment⁷ to an eight-power Western draft resolution⁸ to set up a scientific committee on the effects of atomic radiation, the Soviet Union proposed the following two paragraphs:

Considering that mankind can be freed from the danger of atomic radiation arising from experiments with, or the use of, nuclear weapons only if an international agreement is reached on the prohibition of nuclear weapons and the establishment of strict international control over the application of that decision,

Calls upon States, and in the first place States possessing nuclear material and the means of producing nuclear weapons, to continue their efforts towards the earliest possible solution of the question of the reaching of an agreement on the cessation of experiments with all types of nuclear weapons.

The Soviet amendment was rejected in the First Committee. On 3 December 1955, the General Assembly adopted the eight-Power draft resolution, as amended, by acclamation as resolution 913 (X). It reads as follows:

The General Assembly,

Recognising the importance of, and the widespread attention being given to, problems relating to the effects of ionizing radiation upon man and his environment,

Believing that the widest distribution should be given to all available scientific data on the short-term and long-term effects upon man and his environment of ionizing radiation, including radiation levels and radio-active "fall-out",

Noting that studies of this problem are being conducted in various countries,

Believing that the peoples of the world should be more fully informed on this subject,

1. *Establishes* a scientific committee consisting of Argentina, Australia, Belgium, Brazil, Canada, Czechoslovakia, Kgypt, France, India, Japan, Mexico, Sweden, the United Kingdom of Great Britain and Northern Ireland, the United States of America and the Union of Soviet Socialist Republics, and requests the Governments of these countries each to designate one scientist, with alternates and consultants as appropriate, to be its representative on this Committee;

2. *Requests* the Committee:

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- (a) To receive and assemble in an appropriate and useful form the following radiological information furnished by States Members of the United Nations or members of the specialised agencies;
 - (i) Reports on observed levels, of ionizing radiation and radioactivity in the environment;
 - (ii) Reports on scientific observations and experiments relevant to the effects of ionizing radiation upon man and his environment already under way or later undertaken by national scientific bodies or by authorities of national Governments;
 - (b) To recommend uniform standards with respect to procedures for sample collection and instrumentation, and radiation counting procedures to be used in analyses of samples;
 - (c) To compile and assemble in an integrated manner the various reports, referred to in sub-paragraph (a) (i) above, on observed radiological levels;
 - (d) To review and collate national reports, referred to in sub-paragraph (a) (ii) above, evaluating each report to determine its usefulness for the purposes of the Committee;
 - (e) To make yearly progress reports and to develop by 1 July 1958, or earlier if the assembled facts warrant, a summary of the reports received on radiation levels and radiation effects on man and his environment together with the evaluations provided for in sub-paragraph (d) above and indications of research projects which might require further study;
 - (f) To transmit from time to time, as it deems appropriate, the documents and evaluations referred to above to the Secretary-General for publication and dissemination to States Members of the United Nations or members of the specialised agencies;

3. *Requests* the Secretary-General to provide the Committee with appropriate assistance in organising and carrying on its work, and to provide a secretary of the Committee;

4. *Calls upon* all concerned to co-operate in making available reports and studies relating to the short-term and long-term effects of ionizing radiation upon man and his environment and radiological data collected by them;

5. *Requests* the specialised agencies to concert with the Committee concerning any work they may be doing or contemplating within the sphere of the Committee's terms of reference to assure proper co-ordination;

6. *Requests* the Secretary-General to invite the Government of Japan to nominate a scientist, with alternates and consultants as appropriate, to be its representative on the Committee;

7. *Decides* to transmit to the Committee the records of the proceedings of the General Assembly on the present item.

The Scientific Committee on the Effects of Atomic Radiation has continued to meet since: 1955 and has submitted periodic reports to the General Assembly.

Positions in 1956

During 1956, the various countries developed more clearly defined positions on the subject of banning nuclear weapon tests. During meetings of the five-power Sub-Committee of the Disarmament Commission in March and April, the Soviet Union proposed that independently of any agreement on other disarmament problems, States should agree to partial measures, including the immediate discontinuance of thermo- nuclear weapon tests. A joint French-British paper on comprehensive disarmament measures¹⁰ proposed that a special branch of the disarmament control organ should be established to supervise the limiting of nuclear explosions and that such tests should be limited in the second stage of the general disarmament programme and prohibited in a subsequent stage. A United States paper¹¹ provided that nuclear tests should be "limited and monitored" in the first phase of a comprehensive disarmament programme.

At a plenary meeting of the Disarmament Commission in July 1956, Yugoslavia urged early implementation of initial disarmament measures, including the cessation of nuclear tests, with "such forms and degrees of control as are required".¹² India, on 13 July 1956, formally placed a similar proposal before the Commission and pointed out that:¹³

While there may be certain authorities who may not feel fully convinced that experimental explosions on the present scale will cause serious danger to humanity, it is evident that no risks should be taken when the health, well-being and even survival of the human race are at stake. The responsible opinion of those who believe that nuclear tests do constitute a serious danger to human welfare and survival must, therefore, be decisive in such a context... The prohibition of further explosions would be to a large extent self-enforcing. The question of controls and of national sovereignty would not be involved at this stage, and the available evidence indicates that with proper utilisation of monitoring devices no evasion of significance would be possible.

Australia, Canada, France, the United Kingdom and the United States proposed three guiding principles for agreement on disarmament. They were that:¹⁴

The programme should provide that, at appropriate stages and under proper safeguards, the build-up of stockpiles of nuclear weapons would be stopped, all future production of nuclear material would be devoted to peaceful uses and limitations would be imposed on the testing of nuclear weapons.

In October 1956, the subject was taken up in an exchange of letters between Premier Bulganin and President Eisenhower. Premier Bulganin proposed an agreement to prohibit the testing of atomic and hydrogen weapons, maintaining that supervision was not a difficulty because "any explosions of an atomic or hydrogen bomb cannot in the present state of scientific knowledge be produced without being recorded in other countries". President Eisenhower maintained that "to be effective and not simply a mirage, all these plans require systems of inspection and control".

Thus, at the end of 1956, the initial attitude of various countries to the question of nuclear testing was becoming clear: the Soviet Union and India were calling for an early and separate agreement on the banning of all nuclear tests without supervision, maintaining that no significant testing could go undetected; Yugoslavia urged such an agreement with such controls as might prove necessary; and the Western powers regarded the limitation and eventual banning of nuclear testing, with adequate supervision, as part of a comprehensive disarmament programme.

During the debates at the eleventh session of the General Assembly, from November 1956 to March 1957, Canada, Japan and Norway proposed a system for advance registration with the United Nations of nuclear test explosions.¹⁵ In the course of the debate, India and Sweden suggested a moratorium on nuclear weapon tests, while the Philippines suggested that all nuclear experiments conducted by the United States or the Soviet Union should be confined to a special territory for their use.¹⁶

Sub-Committee in 1957

In 1957, the five-power sub-committee began to give closer attention to possible partial disarmament measures. Hitherto, most proposals in the Sub-Committee had been package arrangements linking together several measures of disarmament.

India, Japan, Norway and Yugoslavia submitted memoranda¹⁷ to the Sub-Committee suggesting various ways of dealing with the regulation or cessation of nuclear weapon tests.

The Soviet Union proposed, on 14 June 1957,¹⁸ that independently of other measures, there should be agreement on the "immediate cessation of all atomic and hydrogen tests if only for a period of two or three years" as well as "the establishment of an international commission" to supervise the agreement and "the establishment, on a basis of reciprocity, of control posts on the territory of the Soviet Union, the United States of America and the United Kingdom and in the Pacific Ocean area". On 2 July, the four Western Powers welcomed¹⁹ the USSR's acceptance of inspection posts and declared that a temporary cessation of tests should be subject to precise agreement on duration and time, on the location of inspection posts and on the relationship of the agreement to other provisions of the first-stage disarmament agreement. On 29 August, the four Western Powers presented a paper²⁰ consolidating twelve proposals for partial disarmament measures which were stated to be inseparable. One of these provided that all parties should undertake to refrain from conducting nuclear test explosions for a period of twelve months from the entry into force of the various conventions, provided that agreement had been reached on the necessary controls. According to the four-power proposal, if this inspection system operated to the satisfaction of every party and if progress was achieved on an inspection system for the cessation of the production of fissionable material for weapons purposes, the suspension of testing would continue for a further twelve months. If the system for the cessation of fissionable material production had not been installed at the end of twenty-four months, testing could be resumed.

Consideration by the General Assembly 1957

At the General Assembly's twelfth session, in 1957, the Soviet Union proposed an additional agenda item on the "Discontinuance under international control of tests of atomic and hydrogen weapons", and submitted a draft resolution which repeated the proposals it had made in the Sub-Committee on 14 June but included Australia among the territories where control posts were to be established.²¹ Draft resolutions submitted by Japan, India and Yugoslavia²² called for an urgent agreement on the suspension of all nuclear weapon tests together with a system of inspection and control. A twenty-four power draft resolution, which included France, the United Kingdom and the United States among its sponsors, urged that priority be given to an inter-linked six-

point disarmament agreement. The provision regarding testing read as follows;

The immediate suspension of testing of nuclear weapons with prompt installation of effective international control, including inspection posts equipped with appropriate scientific instruments located within the territories of the United States of America, the Union of Soviet Socialist Republics and the United Kingdom of Great Britain and Northern Ireland, in Pacific Ocean areas, and at other points as required.

This text appeared unchanged in resolution 1148 (XII), which was adopted by the General Assembly on 14 November 1957, by 56 votes to 9, with 15 abstentions.

Nuclear Testing During 1957-1958

In 1957, there was a greater level of activity in nuclear testing by the United States, the United Kingdom and the Soviet Union than in any previous year, and there was increasing world-wide concern at the effects of fall-out. The United Kingdom and the United States concluded a programme of tests of atomic and thermo-nuclear weapons in November and early December 1957, while the Soviet Union's programme continued to the end of March 1958.

On 26 March 1958, President Eisenhower, referring to a forthcoming programme of United States nuclear tests, stated that United States scientists had succeeded in reducing radioactive fall-out from nuclear explosions and that the United Nations would be invited to send a group of qualified observers to witness a large nuclear explosion in which radio-active fall-out would be drastically reduced. On 31 March 1958, the Supreme Soviet of the Soviet Union adopted a decree ending nuclear testing, and on 4 April, Premier Khrushchev wrote to President Eisenhower drawing attention to the Soviet decision and calling on the Western Powers to suspend nuclear testing also, but reserving the right to resume testing should the Western Powers do so.

President Eisenhower, in his reply of 8 April, observed that the forthcoming United States programme of testing had been announced for a long time; he proposed that technicians from both sides should study the specific control measures which would be necessary if an agreement were ever to be reached on the limitation or suspension of testing. The United States and the United Kingdom resumed testing at the end of April 1958, initiating the most intense test programme that had occurred up to that time. The Soviet Union resumed testing in October.

Conference of Experts on Detection of Nuclear Tests 1958

Discussions in the Disarmament Commission and its Sub-Committee were interrupted in 1958. The exchange of letters between Premier Khrushchev and President of Eisenhower continued during April, May and June 1958 and resulted in a decision to convene a conference of experts to study the possibility of detecting violations of a possible agreement on the suspension of nuclear tests. The conference was to be “without prejudice” to the respective positions of the Soviet Union and the United States “on the timing and independence of various aspects of disarmament”. The two sides agreed to keep the United Nations informed of the results of their deliberations through the Secretary-General, and accepted his offer of the facilities and staff services in Geneva.

Experts from Canada, France, the United Kingdom and the United States conferred with delegations of experts from the USSR, Poland, Czechoslovakia and Romania at Geneva from 1 July to 21 August 1958. The Secretary-General was represented by a Personal Representative.

In an agreed report,²³ dated 21 August and submitted to their governments and to the United Nations, the experts concluded that the methods for detecting nuclear explosions available at that time—namely, collecting samples of radioactive debris, recording seismic, acoustic and hydro-acoustic waves, the radio signal method, and the use of on-site inspection of unidentified events which could be suspected of being nuclear explosions—made it possible, within limits, to detect and identify nuclear explosions, including low-yield explosions (1 to 5 kilotons). The experts therefore considered it technically feasible, with capabilities and limitations indicated in their report, to establish a workable and effective control system to detect violations of an agreement on the world-wide suspension of nuclear weapon tests. The control system would be under the direction of an international control organ.

The network of control posts would include from 160 to 170 land-based control posts and about 10 ships. Technical considerations would lead to the following approximate distribution of control posts over the globe: North America, 24; Europe, 6; Asia, 37; Australia, 7; South America, 16; Africa, 16; Antarctica, 4; together with 60 control posts on islands and about 10 ships. Air samples would be taken by aircraft in certain circumstances. Some 20 to 100 earthquakes each year would be

indistinguishable from underground tests of 5 kilotons and would require on-site inspection.

The Soviet Union, the United Kingdom and the United States subsequently agreed to begin negotiations in Geneva on 31 October 1958 in an effort to reach agreement on a treaty for the discontinuance of nuclear weapon tests on the basis of the experts' report.

In separate statements on 22 August,²⁴ the United States and the United Kingdom proposed that, subject to reciprocity, nuclear testing be suspended for one year from the beginning of the negotiations and that the suspension be continued under the treaty on a yearly basis provided that an inspection system was working satisfactorily and progress was being made on implementing other disarmament measures. On 2 July, President de Gaulle of France had notified the Soviet Premier that France would not sign a test ban treaty unless it were accompanied by other measures of disarmament.

In a memorandum of 30 September 1958²⁵ explaining his reasons for placing the question of disarmament on the provisional agenda of the General Assembly's thirteenth session, the Secretary-General commented on the relationship of the United Nations to the initiatives that had taken place outside the Organisation. He noted that, while the experts meeting at Geneva had worked out the technical components of a control system for the discontinuance of nuclear weapon tests, organisational and administrative requirements, which would involve other Member States and require their co-operation, still remained to be considered and would function better when integrated with the United Nations.

Consideration by the General Assembly 1958

The thirteenth session of the General Assembly had as a separate agenda item "The discontinuance of atomic and hydrogen weapons tests", proposed by the Soviet Union, which maintained²⁶ that this issue should be separate from the general disarmament programme.

The Assembly also received the first comprehensive report of the United Nations Scientific Committee on the Effects of Atomic Radiation,²⁷ which slated that:

Radioactive contamination of the environment resulting from explosions of nuclear weapons constitutes a growing increment to world-wide radiation levels. This involves new and largely unknown hazards to present and future populations; these hazards, by their very nature, are

beyond the control of the exposed persons. The Committee concludes that all steps designed to minimize irradiation of human populations will act to the benefit of human health. Such steps include the avoidance of unnecessary exposure resulting from medical, industrial and other procedures for peaceful uses, on the one hand, and the cessation of contamination of the environment by explosions of nuclear weapons, on the other.

In the course of the deliberation on the disarmament items, the United Kingdom and the United States announced their intention to suspend tests for one year from 31 October 1958, when test ban negotiations among the three nuclear Powers were to begin in Geneva, provided the Soviet Union did not resume nuclear testing. They further offered to extend the suspension on a year-by-year basis provided that the inspection system to be established during the first year of a test ban treaty was working effectively and that "satisfactory progress" was being made in other fields of disarmament.

On 9 October, the Soviet Union submitted a draft resolution²⁸ by which the General Assembly would: call upon all States carrying out atomic and hydrogen weapon tests immediately to stop such tests; recommend that States possessing nuclear weapons should enter into negotiations with a view to the conclusion of an appropriate agreement; and call upon all States to accede to that agreement.

On 10 October, a seventeen-power draft resolution submitted by Argentina, Australia, Belgium, Brazil, Canada, Denmark, Ecuador, Iran, Italy, Laos, the Netherlands, New Zealand, Norway, Pakistan, Thailand, the United Kingdom and the United States²⁹ provided for the General Assembly to: (1) urge that in the negotiations between States that had tested nuclear weapons the parties make every effort to reach early agreement on the suspension of such tests under effective international control; (2) urge the parties not to undertake further testing of nuclear weapons while these negotiations were in progress; and (3) invite the conference on nuclear weapon tests to avail itself of the assistance and services of the Secretary-General and request it to keep the United Nations informed.

On 15 October, another draft resolution on nuclear tests was submitted by Afghanistan, Burma, Cambodia, Ceylon, Ethiopia, Ghana, India, Indonesia, Iraq, Morocco, Nepal, the United Arab Republic and Yemen.³⁰ Yugoslavia subsequently joined the sponsors. By this fourteen-Power proposal, as later revised, the Assembly would: (1) call for the immediate discontinuance of the testing of atomic and hydrogen

weapons until agreement was reached by the States concerned with regard to the technical arrangements and controls considered necessary to ensure the observance of the discontinuance of such tests; (2) request the parties to the Geneva negotiations to report to the General Assembly their agreement on the arrangements necessary so that the Assembly might take steps to extend the operation of the agreement to all States; (3) call upon all other States to desist from embarking on nuclear weapon tests pending the completion of the aforementioned Assembly action; and (4) request the Secretary-General to render assistance to the Geneva conference.

Ghana and the United Arab Republic expressed concern over reports that France intended to test nuclear weapons in the Sahara. France declared that the cessation of nuclear tests was conceivable only within the framework of effective nuclear disarmament, that a first step towards nuclear disarmament would be taken only when the atomic powers, under international control, stopped increasing their stockpiles and began reducing them and that if an agreement ending tests should be reached without France's participation, it would not apply to France, whose future adherence to an agreement would depend on future circumstances.

In an effort to secure unanimity in the First Committee on the question of nuclear tests, Austria, Japan and Sweden, on 31 October 1958, submitted a draft resolution³¹ by which the General Assembly would: (1) express the hope that the Geneva conference on the discontinuance of nuclear weapon tests would be successful; (2) ask the parties to report to the Assembly the agreement that might result from their negotiations; and (3) request the Secretary-General to provide assistance and services.

Attempts to secure agreement, among the sponsors of the various proposals on nuclear weapon tests, on a text which would be acceptable to all, however, did not meet with success. The General Assembly rejected the fourteen-power draft resolution by 41 votes to 27, with 13 abstentions. The Soviet Union did not press its proposal on the immediate cessation of nuclear weapon testing.

The General Assembly, on 4 November, adopted the seventeen-Power draft by 49 votes to 9, with 22 abstentions, as resolution 1252 A (XIII) and the three-Power draft by 55 votes to 9, with 12 abstentions, as resolution 1252 B (XIII). Resolution 1252 A and B (XIII) reads as follows:

A***The General Assembly,***

Reaffirming the continuing interest and responsibility of the United Nations in the field of disarmament, which have found expression in the Charter of the United Nations and in previous resolutions of the General Assembly,

Welcoming the agreement which has been achieved in the Conference of Experts to Study the Possibility of Detecting Violations of a Possible Agreement on the Suspension of Nuclear Tests,

Noting that negotiations on the suspension of nuclear weapons tests and on the actual establishment of an international control system on the basis of the report of the Conference of Experts began on 31 October 1958,

Noting further that qualified persons are expected to meet soon to study the technical aspects of measures against the possibility of surprise attack,

Recognising that these developments are encouraging steps in the direction of progressive openness of information concerning technologies and armaments, which may assist in promoting the fundamental aims of the United Nations in the field of disarmament,

I

1. *Urges* that in the negotiations between States that have tested nuclear weapons the parties make every effort to reach early agreement on the suspension of nuclear weapons tests under effective international control;
2. *Urges* the parties involved in these, negotiations not to undertake further testing of nuclear weapons while these negotiations are in progress;

II

3. *Calls attention* to the importance and urgency of achieving the widest possible measure of agreement in the forthcoming study of the technical aspects of measures against the possibility of surprise attack;

III

4. *Expresses determination* that the trend of the recent encouraging initiatives, including the technical approach, should continue

with a view to contributing to a balanced and effectively controlled world-wide system of disarmament;

IV

5. *Invites* the conferences on nuclear weapons tests and on surprise attack to avail themselves of the assistance and services of the Secretary-General and requests them to keep the United Nations informed;
6. *Invites* the Secretary-General, in consultation with the Governments concerned, to render whatever advice and assistance may seem appropriate to facilitate current developments or any further initiatives related to problems of disarmament;
7. *Requests* that the records of the meetings of the First Committee at which various aspects of disarmament were discussed be transmitted by the Secretary-General to the participants in the conferences on nuclear weapons tests and on surprise attack;

V

8. *Reiterates* to the States concerned the invitation, made in General Assembly resolution 1148 (XII) of 14 November 1957, to devote, out of the funds made available as a result of disarmament, as and when sufficient progress is made, additional resources to the improvement of living conditions throughout the world and especially in the less developed countries.

B

The General Assembly,

Welcoming the report of the Conference of Experts to Study the Possibility of Detecting Violations of a Possible Agreement on the Suspension of Nuclear Tests,

Welcoming further the decision of the States which have tested nuclear weapons to meet in a conference at Geneva, commencing 31 October 1958, concerning the question of nuclear weapons test's,

1. *Expresses the hope* that the conference will be successful and lead to an agreement acceptable to all;
2. *Requests* the parties concerned to report to the General Assembly the agreement that may be the result of their negotiations;
3. *Requests* the Secretary-General to render such assistance and provide such services as may be asked for by the conference commencing at Geneva on 31 October 1958.

Voluntary Suspension of Testing During 1958-1961

On 31 October 1958, the Soviet Union transmitted to the United Nations a statement in connexion with the Geneva conference Observing that the United States and the United Kingdom had intensified their nuclear weapon testing programme after the USSR had unilaterally suspended testing on 31 March, the Soviet Union declared its right to continue test explosions on a "one-to-one ratio" to the combined number of explosions carried out by the two Western Powers since 31 March.

On 7 November the United States transmitted the text of a statement by President Eisenhower³³ noting that the Soviet Union had continued the testing of nuclear weapons despite the opening of negotiations in Geneva on 31 October and despite the General Assembly's adoption of resolution 1252 A (XIII) on 4 November urging the parties to the Geneva negotiations not to undertake further testing of nuclear weapons. President Eisenhower said that the United States would, nevertheless, continue the suspension of tests, and hoped that the Soviet Union would do the same.

In fact, the United Kingdom suspended nuclear tests after 23 September 1958, the United States after 30 October and the Soviet Union after 3 November. This voluntary ban was maintained by the three Powers until the Soviet Union resumed testing on 1 September 1961. France was to conduct its first three nuclear test explosions in 1960.

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29. *Ibid.*, document A/C.1/L.205.
30. *Ibid.*, document A/C.1/L.202/Rev.1 and Add. 1 and 2.
31. *Ibid.*, document A/3974 and Add. 1 and 2, para. 31 (A/C.1/L.213).
32. Document A/3973.
33. Document A/3985.

* On 13 January 1958, the Secretary-General received a deputation led by Dr. Linus Pauling which presented a petition signed by 9,000 scientists from forty-three countries urging that "an international agreement to stop the testing of nuclear bombs be made now."

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CONFERENCE ON THE DISCONTINUANCE OF NUCLEAR WEAPON TESTS, 1958-1962

Geneva Conference During 1958-1959

The Geneva conference on the Discontinuance of Nuclear Weapon Tests, composed of the Soviet Union, the United Kingdom and the United States and attended by the Personal Representative of the Secretary-General, opened on 31 October 1958. The Conference ceased in January 1962 and its work was transferred, in March 1962, to a sub-committee of the Eighteen-Nation Disarmament Committee, consisting of the same three nuclear Powers.

At the outset of the negotiations, in 1959, the Western powers dropped their insistence that the discontinuance of nuclear testing should be dependent on progress in other fields of disarmament. In the spring of 1959, the United States drew attention to new technical difficulties and called for technical working groups to study (a) the detection of nuclear explosions in outer space (the work on outer space of the 1958 conference of experts was considered insufficient), and (b) new seismic data relevant to detection and identification of underground tests. The number of earthquakes each year which would be indistinguishable from nuclear explosions of 5 kilotons with the control system proposed by the Geneva experts in 1958, was now thought to be 1,500 instead of the 20 to 100 mentioned in the experts' report. The United States was also concerned about the possibility of muffling or "decoupling" deep underground explosions by conducting them in large cavities. The Soviet Union maintained, however, that the 1958 report of the experts was a sufficient basis for the negotiations.

As to the issue on-site inspection, there was disagreement over the criteria for such inspection, and in particular whether such inspections should be automatic when the criteria were met. During talks with

Premier Khrushchev in Moscow in March, British Prime Minister Macmillan proposed that there should be a fixed annual quota of on-site inspections. Following talks between President Eisenhower and Prime Minister Macmillan later that month, the two Western leaders, in letters to Khrushchev, proposed the immediate conclusion of a treaty-banning tests in the atmosphere up to 50 kilometres, while talks continued on the problems associated with the detection of tests underground and in outer space. The Soviet leader rejected the partial test ban but accepted in principle that there should be an annual quota of on-site inspections. In the summer of 1959, the Geneva Conference established Technical Working Group 1 to consider the detection of tests at high altitudes or in outer space. It presented a report in July detailing nine agreed methods of detection out of ten considered.

The Geneva Conference also made progress in 1959 on the broad outlines of a control organisation, which was to consist of a commission, a system of detection and identification, a chief executive officer and a conference of parties to the treaty. The control organisation's relationship with the United Nations was decided on 16 April 1959 on the basis of a draft article submitted by the United Kingdom. It read:

Relationships with other international organisations

1. The commission, with the approval of the conference, is authorised to enter into an agreement-or agreements establishing an appropriate relationship between the organisation and the United Nations.
2. The commission, with the approval of the conference, shall arrange for the organisation to be brought into an appropriate relationship with any international organisation which may in the future be established among any of the parties to this treaty to supervise disarmament and arms control measures.

Other references to the United Nations in the agreed draft articles dealt with: registration of the treaty; a preambular statement about the objectives of the United Nations in the field of disarmament; reports to the United Nations that might be forwarded by the Conference to the control organisation; and authority for the preparatory commission to accept a loan from the United Nations to meet the expenses of establishing the control organisation.

Consideration by the General Assembly in 1959

The fourteenth session of the General Assembly, in 1959, was concerned not only with the Geneva Conference but also with the declared intention of the French Government to conduct its first nuclear

weapon tests. India proposed that the question of the suspension of nuclear and thermo-nuclear tests be included in the agenda of the fourteenth session¹ so that, notwithstanding the Geneva Conference, the United Nations might continue to consider the question and contribute to its early and satisfactory solution. India also submitted a draft resolution, co-sponsored by twenty-three other countries,² whereby the General Assembly would appeal to the States concerned in the Geneva discussions to continue their present voluntary suspension of tests, and to other States to desist from such tests. Austria, Japan and Sweden also submitted a draft resolution,³ by which the Assembly would urge the States concerned to continue their voluntary discontinuance of the testing of nuclear weapons.

On 21 November, the General Assembly adopted the three-Power draft by 78 votes to 0, with 2 abstentions, as part A of resolution 1402 (XIV) and the 24-Power draft by a vote of 60 to 1, with 20 abstentions, as part B.⁴ The resolution reads as follows:

A

The General Assembly,

Recalling its resolution 1252 B (XIII) of 4 November 1958,

Noting that the negotiations on the discontinuance of nuclear weapons tests and on the establishment of an appropriate international control system, which began at Geneva on 31 October 1958, are still continuing,

1. *Expresses its appreciation* to the States concerned for their efforts to reach an agreement relating to the prohibition of nuclear weapons tests and including an appropriate international control system;
2. *Expresses the hope* that these States will intensify their efforts to reach such an agreement at an early date;
3. *Urges* the States concerned in these negotiations to continue their present voluntary discontinuance of the testing of nuclear weapons;
4. *Requests* the States concerned to report to the General Assembly the results of their negotiations.

B

The General Assembly,

Desiring to safeguard mankind from the increasing hazards resulting from tests of nuclear and thermo-nuclear weapons,

Bearing in mind the profound concern evinced by the peoples of all countries regarding the testing of nuclear and thermonuclear weapons,

Welcoming the endeavours at Geneva of the States concerned to reach an agreement on the discontinuance of these tests, and the progress so far achieved,

Noting with appreciation that the States concerned have voluntarily suspended such tests, enabling progress in the discussions at Geneva,

Considering that an agreement on the cessation of nuclear and thermo-nuclear tests with effective international control is urgent,

1. *Expresses its appreciation* to the States concerned for their patient and sincere efforts to reach agreement on the discontinuance of nuclear and thermo-nuclear tests with effective international control, and for the progress hitherto achieved;
2. *Expresses further the hope* that the States concerned will reach such agreement at an early date;
3. *Appeals* to the States concerned in the Geneva discussions to continue their present voluntary suspension of tests, and to other States to desist from such tests;
4. *Requests* the States concerned to report to the Disarmament Commission and to the General Assembly the results of their negotiations.

Question of French Nuclear Tests in the Sahara

In view of the French intention to carry out tests in the Sahara, Morocco requested the General Assembly to consider the question. By a draft resolution submitted by twenty-two powers,⁵ the Assembly would: (1) express its grave concern over the intention of the French Government to conduct nuclear tests in the Sahara; and (2) urge France to refrain from such tests.

France advocated general nuclear disarmament applicable to all without distinction and stated that it would never accept any discrimination. If the three nuclear Powers agreed, under international control, to stop production of fissionable materials for nuclear explosives, to convert their stockpiles for peaceful uses and to eliminate nuclear delivery vehicles, France would adopt the same measures. If, however, they should merely agree to renounce nuclear test explosions, France's position would not be altered.

Another draft resolution, submitted by Italy, Peru and the United Kingdom,⁶ expressed the hope that the French Government would

associate itself with the arrangements which might be worked out at the Geneva Conference on the Discontinuance of Nuclear Weapon Tests.

The United Kingdom and the United States wanted the Assembly to emphasise the need for an effectively controlled agreement to end all nuclear weapon tests. The Soviet Union said that the projected French tests had to be considered against the background of the progress at Geneva and of the improvement in international relations.

The Committee rejected the three-Power proposal by 38 votes to 24, with 20 abstentions. The General Assembly adopted the 22-power draft resolution by 51 votes to 16, with 15, abstentions, as resolution 1379 (XIV), with the United Kingdom and the United States voting against and the Soviet Union in favour. The resolution reads as follows:

The General Assembly,

Conscious of the great concern throughout the world repeatedly expressed in the United Nations over the prospect of further nuclear tests and their effects upon mankind,

Noting the declared intention of the Government of France to undertake nuclear tests in the Sahara,

Considering the deep concern felt over the dangers and risks which such tests entail,

Considering that significant progress is being made in the negotiations now proceeding at Geneva concerning the discontinuance of nuclear weapons tests under an international control system,

Considering that the parties to those negotiations have facilitated their progress by voluntarily suspending such tests,

Considering that the purpose of the said negotiations is to bring about a general discontinuance of nuclear weapons tests and that it is to be hoped that, in the same spirit which inspired the present voluntary suspension of tests, no State will initiate or resume tests of this kind,

Recognising the anxiety caused by the contemplated tests in the Sahara among all peoples, and more particularly those of Africa,

1. *Expresses its grave concern* over the intention of the Government of France to conduct nuclear tests;
2. *Requests* France to refrain from such tests.

On 14 February 1960, the day after France conducted its first nuclear test, twenty-two Member States—Afghanistan, Burma, Ceylon, Ethiopia, the Federation of Malaya, Ghana, Guinea, India, Indonesia, Iraq, Jordan,

Lebanon, Liberia, Libya, Morocco, Nepal, Pakistan, Saudi Arabia, Sudan, Tunisia, the United Arab Republic and Yemen—requested a special session of the Assembly to consider the question of French nuclear tests in the Sahara. As the number of Members who favoured the holding of a special session was less than the majority of forty-two required under the General Assembly's rules of procedure, the special session was not convened.

Antarctic Treaty

In another context, the Soviet Union had reached agreement with France, the United Kingdom, the United States and eight other powers on the Antarctic Treaty, which was signed on 1 December 1959. The treaty provides that: "any nuclear explosion in Antarctica and the disposal of radio-active waste material shall be prohibited" (Article V.I) and that observers appointed by the original contracting parties shall have complete access at all times to the whole of Antarctic territory and all installations therein as well as the right to conduct aerial inspection of the territory (Article VII).

Geneva Conference of 1960

Meanwhile, the Geneva Conference had resumed towards the end of 1959, and an agreement was reached on setting up Technical Working Group 2, to establish criteria for on-site inspection. The Group would, among other things, be able to examine the new seismic data presented by the United States. In its report, submitted in December,⁷ there was agreement on recommendations for improvements in the detection system proposed by the 1958 Geneva conference of experts, and there were appendices recording the views of the Soviet Union, on the one hand, and the United States and the United Kingdom, on the other, concerning criteria for on-site inspection and the number of unidentified seismic events likely to occur.

The Western powers considered that the unilateral undertaking to suspend nuclear weapon tests had expired on 1 December 1959 when President Eisenhower had issued the following statement:

Although we consider ourselves free to resume nuclear weapons testing, we shall not resume nuclear weapons tests without announcing our intention in advance of any resumption. During this period of voluntary suspension of nuclear weapons tests, the United States will continue its active programme of weapon research, development, and laboratory-type experimentation.

On 3 January 1960, Premier Khrushchev stated that the Soviet Union would not resume testing unless the Western powers did so.

In February, the Western Powers put forward a new proposal at the Geneva Conference—a treaty to ban all testing in environments where control, in the Western view, seemed feasible, namely, in the atmosphere, in outer space to the greatest height controllable, under water, and underground above a seismic magnitude of 4.75. They proposed that 30 per cent of all unidentified seismic events should be subject to on-site inspection if United States criteria put forward in Technical Working Group 2 were accepted; alternatively, 20 per cent of all seismic events located by the detection system should be subject to inspection. It was agreed that there could be an annual quota of on-site inspections fixed in advance, but only as a percentage of the number of events occurring in the preceding year.

In March, the Soviet Union proposed that a treaty should ban tests in the atmosphere, in outer space, under water, and underground to a seismic threshold of 4.75 and should be associated with a moratorium on all testing below the threshold of 4.75. Following the meeting between President Eisenhower and Prime Minister Macmillan at the end of March, the Western powers agreed to the Soviet proposal, provided that a co-ordinated regional programme to improve detection procedures was instituted forthwith and that the moratorium on testing below the threshold was for a fixed term only.

The positions of the two sides at the Geneva Conference appeared to be closer at this period than at any previous time, although there were still unresolved differences concerning the composition of the commission and the control posts which would be required under the treaty. The Geneva Conference recessed on 12 May 1960, pending the meeting between the Heads of Government of France, the USSR, the United Kingdom and the United States, which was to have been held in Paris on 16 May but which, owing to the U-2 aircraft incident of that month, was cancelled.

The Geneva Conference resumed on 27 May to hear the report of a scientific working group, the Seismic Research Programme Advisory Group, which had been set up some weeks earlier. The Soviet Union now stated it had no need for a seismic research programme on its territory since it considered the report of the 1958 Geneva conference of experts satisfactory, but would insist on participating in new research programmes conducted by the Western Powers and in particular would require access to any nuclear devices exploded.

Little further progress was made in Geneva in 1960, although the Soviet Union formally proposed a quota of three on-site inspections each year, and an annex on immunities and privileges was agreed upon in October.

Consideration by the General Assembly in 1960

The General Assembly's fifteenth session included in its agenda an item proposed by India on "Suspension of nuclear and thermo-nuclear tests".⁸ In the course of the debate, the three powers participating in the Geneva Conference on the Discontinuance of Nuclear Weapon Tests explained their respective positions in the negotiations.

Two draft resolutions, which dealt exclusively with the question of nuclear weapon tests, were put to the vote during the session. A draft resolution submitted by Austria, India and Sweden⁹ urged the States concerned in the Geneva negotiations to continue their present voluntary suspension of the testing of nuclear weapons and to seek a solution to "the few remaining questions". The other draft resolution, a 26-Power text,¹⁰ also requested other States to refrain from undertaking such tests.

The Soviet Union supported both draft resolutions, noting that the 26-Power draft had the merit of also appealing to other States to refrain from carrying out such tests.

The United States explained that it would abstain on both the three-Power and 26-Power draft resolutions. The three-power draft implied that the few questions which remained to be resolved before the final agreement could be concluded were not important; the United States, however, thought they were basic issues, on the satisfactory solution of which depended the success of the Conference. The United States also had reservations about the requests in both drafts for the continuance of the present voluntary suspension of nuclear weapon testing. The policy of the United States Government remained that the moratorium had ended on 31 December 1959. Though the United States would not resume nuclear weapon tests without stating in advance its intention of doing so, it was concerned lest the possibility of the indeterminate extension of voluntary suspension of nuclear testing came to be regarded as an acceptable alternative to a safeguarded agreement on nuclear testing.

On 20 December 1960, the Assembly adopted the three-power text by 88 votes to 0, with 5 abstentions, as resolution 1577 (XV) and the 26-Power draft by 83 to 0, with 11 abstentions, as resolution 1578 (XV).¹¹

Resolution 1577 (XV) reads as follows:

The General Assembly,

Recalling its resolutions 1252 B (XIII) of 4 November 1958 and 1402 (XIV) of 21 November 1959,

Considering the importance and urgency of an agreement on the prohibition of nuclear and thermo-nuclear weapons tests, with effective international control,

Noting with satisfaction that further progress with regard to such, an agreement has been achieved at the negotiations in Geneva since the fourteenth session of the General Assembly and that the States concerned have voluntarily suspended such tests since the autumn of 1958,

1. *Urges* the States concerned to seek a solution for the few remaining questions, so that the conclusion of the agreement will be achieved at an early date;
2. *Urges* the States concerned in these negotiations to continue their present voluntary suspension of the testing of nuclear weapons;
3. *Requests* the parties concerned to report the results of their negotiations to the Disarmament Commission and to the General Assembly.

Resolution 1578 (XV) reads as follows:

The General Assembly,

Recalling its resolutions 1379 (XIV) of 20 November 1959 and 1402 (XIV) of 21 November 1959,

Continuing to bear in mind the profound concern evinced by the peoples of all countries regarding the testing of nuclear and thermo-nuclear weapons and the consequences thereof,

Recognising that, as a result of the endeavours at Geneva of the parties concerned, substantial progress has been made towards reaching agreement on the cessation of the testing of nuclear and thermo-nuclear weapons, under appropriate international control,

Recognising further that agreement on the cessation of tests of nuclear and thermo-nuclear weapons is not only imperative but urgent,

1. *Urges* the States concerned to make every effort to reach agreement as soon as possible on the cessation of tests of nuclear and thermo-nuclear weapons, under appropriate international control;

2. *Urges* the States concerned in the Geneva negotiations to continue their present voluntary suspension of the testing of nuclear and thermo-nuclear weapons, and requests other States to refrain from undertaking such tests;

3. *Requests* the States concerned in the Geneva negotiations:

- (a) To keep the Disarmament Commission periodically informed of the progress of their negotiations;
- (b) To report the results of their negotiations to the Disarmament Commission and to the General Assembly.

Geneva Conference of 1961

When the Geneva Conference resumed its work in March 1961, the Soviet Union proposed that instead of a single administrator as chief executive officer of the control organisation, there should be an administrative council of three members representing, respectively, (a) the USSR and its allies, (b) the United Kingdom and the United States and their allies, and (c) the "neutral States", and that the three council members would act as a unit in regard to all steps to be taken in the execution of their duties. The Soviet Union viewed this proposal as a safeguard against any possibility of one-sided action by a single executive.

The Soviet Union stated that it could not ignore the possibility that France, as a member of the North Atlantic Treaty Organisation (NATO), could, by continuing its nuclear tests, contribute to the improvement of NATO's existing nuclear weapon stockpile or to the development of new nuclear weapons. Such activities on the part of the Western powers could not help but give them a one-sided advantage and thus threatened to nullify the possibility of concluding any agreement on banning nuclear weapon tests.

Between March and May 1961, the United States and the United Kingdom submitted new proposals extending to three years the moratorium on underground tests below the 4.75 seismic threshold; banning all other tests; reducing by two the number of control posts on Soviet territory; providing for a sliding scale of annual inspections ranging from twelve to twenty on-site inspections; accepting the right of veto on the total budget; providing for parity representation between East and West in the control commission; and granting Soviet scientists access to any nuclear devices used in a United States underground research programme. On 18 April 1961, they submitted a draft treaty incorporating the new positions.

When President Kennedy and Premier Khrushchev met in Vienna early in June, one of the subjects submitted was the test ban deadlock. On 4 June, in a memorandum to Kennedy, Mr Khrushchev proposed two alternatives for resolving the test ban issue: either a test ban treaty should be concluded on the basis of the USSR's proposals, or the test ban issue should be considered within the context of the question of general and complete disarmament, the solution of which would automatically dispose of the problem of nuclear weapon tests. Khrushchev also insisted on the acceptance of the USSR's proposal for a tripartite administrative council, representative of East, West and neutrals.

The United States and the United Kingdom maintained that to accept the Soviet proposal would be to substitute self-inspection for international control and, further, that to merge the issue of a ban on nuclear weapon testing with general and complete disarmament would drown the former.

In July 1961, the United Kingdom and the United States announced that they had asked that an item entitled "The urgent need for a treaty to ban nuclear weapon tests under effective international control" be placed on the agenda of the sixteenth session of the General Assembly. They stated that since Soviet policies at the Geneva Conference had blocked any hope of agreement, they had been compelled to request the United Nations to add its authoritative voice in urging the Soviet Union to make the conclusion of a treaty possible. On 28 August 1961, the United States and the United Kingdom put forward further proposals, offering to abandon the underground threshold if the number of control posts or on-site inspections was increased.

The Soviet view was that so long as the arms race continued, the Western demands for international controls over a test ban agreement amounted to nothing but a desire to set up an intelligence network on USSR territory. Once the Western powers had accepted the Soviet proposals for general and complete disarmament, the USSR would accept any Western proposals for controls, including controls over a test ban treaty.

Resumption of Testing 1961

On 30 August, the USSR Government declared that, faced with the increasing aggressiveness of the nato military bloc and its war preparations, it had been compelled, in order to strengthen its security, to take a number of steps, including the carrying out of experimental nuclear weapon explosions.

The President of the United States declared on the same day that the USSR's unilateral decision obliged the United States to decide what its own national interests required. On 3 September, the United Kingdom and the United States proposed an end to all atmospheric tests without international control. On 5 September, United States underground tests were authorised. From 1 September to 4 November, the Soviet Union conducted a series of tests, mostly thermo-nuclear and all but one in the atmosphere. The United States resumed underground testing on 15 September and announced several underground explosions before the end of 1961.

On 9 September, the Western powers proposed that, in view of the USSR's lack of interest in serious negotiations, the Conference recess immediately, pending the completion of the General Assembly debate on the test ban question. They emphasised that their proposal did not mean that they considered the Conference "terminated". The Conference then recessed without setting any date for its next meeting.

Consideration by the General Assembly 1961

At the General Assembly's sixteenth session, there were two agenda items on nuclear testing, one requested by the United Kingdom and the United States on 15 July 1961 and the other requested by India.¹²

In response to the announcement that the Soviet Union would test a 50-megaton bomb, a draft resolution was submitted by Canada, Denmark, Iceland, Iran, Japan, Norway, Pakistan and Sweden¹³ whereby the General Assembly would solemnly appeal to the Government of the USSR to refrain from carrying out its intention to explode in the atmosphere a 50-megaton bomb before the end of October.

The draft was approved by the Assembly on 27 October by 87 votes to 11, with 1 abstention, as resolution 1632 (XVI).¹⁴ A test explosion of some 50 megatons was, however, conducted by the USSR in Novaya Zemlya on 30 October.

On 23 October, a draft resolution on the continuation of the suspension of nuclear and thermo-nuclear weapon tests, submitted by Ethiopia, Ghana, India, Nepal, the United Arab Republic and Yugoslavia,¹⁵ urged the States concerned to refrain from further test explosions pending the conclusion of necessary internationally binding agreements in regard to tests.

The six-power draft resolution was opposed by all the nuclear powers—France, the Soviet Union, the United Kingdom and the United States. The United Kingdom and the United States declared that they

would not accept another uncontrolled moratorium because it had failed in the past and had permitted secret preparations owing to the lack of controls. The United Kingdom recalled that the United States-United Kingdom offer of 3 September to halt tests in the atmosphere without an international control system had been rejected by the Soviet Union, which maintained that the discontinuance of nuclear weapon tests could not be achieved apart from the question of disarmament as a whole and that its separate consideration would not lead to any constructive results.

On 6 November, the Assembly approved the six-Power draft by 71 votes to 20, with 8 abstentions, as resolution 1648 (XVI).¹⁶ It reads as follows:

The General Assembly,

Recalling its resolution 1577 (XV) of 20 December 1960 which urged the States concerned to continue the suspension of test explosions, and also its resolution 1578 (XV) of the same date,

Further recalling its resolution 1379 (XIV) of 20 November 1959,

Bearing in mind both the grave and continuing hazards of radiation resulting to humanity from test explosions as well as their adverse consequences to the prospects of world peace through heightening rather than lessening international tensions,

Considering it urgent and imperative that no further tests should take place,

1. *Expresses its deep concern and profound regret* that test explosions have been resumed;
2. *Earnestly urges* the States concerned to refrain from further test explosions pending the conclusion of necessary internationally binding agreements in regard to tests;
3. *Expresses confidence* that the States concerned will reach agreement as soon as possible on the cessation of tests of nuclear and thermo-nuclear weapons, under appropriate international control;
4. *Calls upon* the States concerned to engage themselves with urgency and speed in the necessary efforts to conclude such agreements expeditiously.

The United Kingdom and the United States submitted a draft resolution¹⁷ by which the Assembly would reaffirm the urgent need for reaching an agreement prohibiting all nuclear weapon tests under

effective control as a first step towards reversing the arms race. The draft, as amended, was adopted by the Assembly on 8 November by 71 votes to 11, with 15 abstentions, as resolution 1649 (XVI).¹⁸ It reads as follows:

The General Assembly,

Recalling its resolutions 1252 (XIII) of 4 November 1958, 1402 (XIV) of 21 November 1959 and 1577 (XV) and 1578 (XV) of 20 December 1960,

Noting with regret the recent initiation of nuclear weapons testing and the rejection of the proposal of the Governments of the United States of America and the United Kingdom of Great Britain and Northern Ireland that further nuclear tests in the earth's atmosphere should be suspended,

Noting that the negotiations at Geneva on the discontinuance of nuclear weapons tests have been recessed pending completion of the discussion of this matter by the General Assembly,

Recognising that a permanent and continuing cessation of nuclear weapons testing in all environments would be guaranteed only by an effective and impartial system of verification in which all States have confidence,

1. *Reaffirms* that it is urgently necessary to reach an agreement prohibiting all nuclear weapons tests under effective control which would be a first step towards reversing the dangerous and burdensome arms race, would inhibit the spread of nuclear weapons to other countries, would contribute to the reduction of international tensions and would eliminate any health hazards associated with nuclear testing;

2. *Urges* the States negotiating at the Conference on the Discontinuance of Nuclear Weapon Tests at Geneva to renew at once their efforts to conclude at the earliest possible time a treaty on the cessation of nuclear and thermo-nuclear weapons tests on the following basis;

- (a) The treaty should have as its objective the cessation of all nuclear weapons tests in all environments under inspection and control machinery adequate to ensure compliance with its terms;
- (b) International control machinery should be organised so as to be representative of all parties to the treaty and should be staffed and operated to guarantee its objectivity and effectiveness, avoiding self-inspection, under procedures which would ensure

that its facilities will be used exclusively for purposes of effective control;

- (c) The day-to-day executive and administrative operations of the control system established under the treaty should not be susceptible to obstruction by the exercise of a veto, and administrative responsibility should be concentrated in the hands of a single administrator acting impartially and functioning under the supervision of a commission composed of representatives of parties to the treaty;

3. *Requests* the negotiating States to report to the Disarmament Commission by 14 December 1961 on the progress of their negotiations;

4. *Calls upon* all States, upon the conclusion of a treaty which will ensure that nuclear weapons tests will be permanently prohibited under effective controls, to ratify or to adhere to that treaty.

End of the Geneva Conference

Upon the resumption, on 28 November 1961, of the Geneva Conference, the Soviet Union reiterated its opposition to any test ban treaty under international control while the arms race continued, and said that a new approach was necessary.

To this end, it put forward a draft agreement on the discontinuance of nuclear weapon tests in the atmosphere, in outer space and under water, which provided for supervision of the ban to be carried out through the existing national means of detection and also for a moratorium on underground tests until a control system had been developed as part of a system of control over general and complete disarmament.

The United Kingdom and the United States rejected the USSR's thesis that as long as the arms race continued, international control was espionage and therefore unacceptable. They believed that the very existence of international tensions and the arms race made the establishment of international controls over a test-ban treaty even more necessary. They further rejected the USSR's draft agreement, which they maintained contravened the recommendations of the 1958 conference of experts, and also the terms of assembly resolution 1649 (XVI) calling for the establishment of international control over a test ban agreement. They also opposed the proposal for another uncontrolled moratorium.

The Conference adjourned on 29 January 1962 *sine die*.

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3. *Ibid.*, para. 5 (A/C.1/L.236/Rev.1).
4. *Ibid.*, *Plenary Meetings*, 842nd meeting.
5. *Ibid.*, *Annexes*, agenda item 68, document A/C.1/L.238/Rev.1.
6. *Ibid.*, document A/C.1/L.239 and Add.1.
7. Document GEN/DNT/TWG.2/9.
8. *Official Records of the General Assembly, Fifteenth Session, Annexes*, agenda items 67, 86, 69 and 73, document A/4414.
9. *Ibid.*, document A/4680, para. 13 (A/C.1/L.256).
10. *Ibid.*, para. 14 (A/C.1/L.258/Rev.1).
11. *Ibid.*, *Plenary Meetings*, 960th meeting.
12. *Ibid.*, *Sixteenth Session, Annexes*, agenda items 73 and 72, documents A/4790 and A/4801 and Add.1.
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14. *Ibid.*, *Plenary Meetings*, 1043rd meeting.
15. *Ibid.*, *Annexes*, agenda items 73 and 72, document A/C.1/L.283/-Rev.2 and Add.1.
16. *Ibid.*, *Plenary Meetings*, 1047th meeting.
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THE NUCLEAR TEST BAN TREATY OF 1963

In the course of 1962, both the United States and the Soviet Union conducted heavy programmes of nuclear testing in the atmosphere—the United States from April to November and the Soviet Union from August to December.

On 14 March 1962, the Conference of the Eighteen-Nation Committee on Disarmament (ENDC) convened in Geneva for the first time. On 21 March, it established a Sub-Committee, consisting of the Soviet Union, the United Kingdom and the United States, and called upon it to continue consideration of a treaty on the discontinuance of nuclear weapon tests.

The Sub-Committee had before it two proposals for a comprehensive agreement on cessation of tests: the United Kingdom-United States proposal of 18 April 1961 and the USSR proposal of 27 November 1961.¹

Joint Memorandum of the Eight Non-Aligned Countries 16 April, 1962

On 16 April 1962, in a plenary session of the ENDC, a joint memorandum was submitted by the eight non-aligned members of the ENDC: Brazil, Burma, Ethiopia, India, Mexico, Nigeria, Sweden and the United Arab Republic.² The joint memorandum stated that there were possibilities of establishing, by agreement, a system for continuous observation and effective control on a purely scientific and non-political basis. Such a system might be based and built upon already existing national networks of observation posts and institutions or, if more appropriate, on certain of the existing posts designated by agreement, together with new posts, if necessary, also to be established by agreement.

The memorandum also referred to the possibility of setting up an international commission, consisting of a limited number of highly

qualified scientists, possibly from non-aligned countries. The commission should be entrusted with: (a) processing all data received from the agreed system of observation posts; and (b) reporting on any nuclear explosion or “suspicious event” on the basis of thorough and objective examination of all the available data. All parties to the treaty should accept the obligation to furnish the proposed commission with the facts necessary to establish the nature of any suspicious and significant event. Pursuant to this obligation, the parties to the treaty “could invite” the commission to visit their territories and/or the site of the event the nature of which was in doubt.

The Soviet Union expressed its willingness to consider the proposals set out in the joint memorandum as a basis for further negotiations. The United Kingdom and the United States thereafter accepted the document as one of the bases for negotiations. There was, however, a difference of opinion between them and the Soviet Union on the interpretation of the joint memorandum, and in particular whether it set forth obligatory or permissive provisions for on-site inspection.

Western Alternative Draft Treaties

On 9 August, the United States submitted revised proposals, based on the principle of compulsory on-site inspections. These proposals included: an unspecified reduction in the annual number of on-site inspections, as compared with the previous proposal for a sliding scale of 12 to 20 on-site inspections; a reduction in the number of control posts from 180 to about 80; and a change in the manning of such posts—instead of being internationally manned and operated, the posts would accept an international observer but would be manned by nationals of the country being inspected.

On 27 August 1962, the United States and the United Kingdom submitted two alternative draft treaties.³ One was a comprehensive treaty in harmony with the proposals of 9 August, envisaging a ban on tests in all environments and making provision for a quota of on-site inspections in the case of suspicious underground events. The other contemplated a test ban in the three non-controversial environments—in the atmosphere, in outer space and under water—without international verification. The United States and the United Kingdom, while stating that they preferred a comprehensive treaty, explained that the partial treaty was submitted as a first step as the Soviet Union was still opposed to compulsory on-site inspection in a comprehensive treaty. They would not, however, accept an uncontrolled moratorium of underground tests in any form whatsoever. On 31 August, the United States and United

Kingdom proposed 1 January 1963 as the cut-off date for tests as part of either the comprehensive treaty or the partial one.

The Soviet Union rejected the United States proposals of 9 August and the United States-United Kingdom comprehensive treaty on the ground that they ran counter to the eight-power memorandum and did not depart from the principle of obligatory on-site inspection. The Soviet Union also rejected the partial treaty on the ground that it excluded underground tests, but was not opposed to considering such a partial treaty if underground tests were voluntarily suspended until a final solution of the problem was reached. It supported a Mexican proposal that there be a cessation of all tests from 1 January 1963.

After the General Assembly had adopted resolution 1762 (XVII) of 6 November 1962 on the urgent need for the suspension of nuclear tests, the ENDC gave most of its attention to the problem of a test ban both in plenary meetings and in the three-member Sub-Committee. Discussion centred mostly on the Assembly's resolution. The negotiations remained deadlocked, however, on the issue of on-site inspection of unidentified underground events.

Non-Aligned Views

Sweden was of the opinion that an international scientific commission, as envisaged in the eight-Power joint memorandum, should be set up immediately on an interim basis, accompanied by the suspension of underground tests, limited in time.

Mexico considered that if the suggested international commission wished to make an on-site inspection in order to identify a suspicious seismic event, refusal by any party to invite the commission should *ipso facto* release the other party from its obligation under the interim arrangement.

Brazil was in agreement with the Swedish proposal which, it considered, could be combined with other proposals, such as the suspension of tests in the atmosphere, in outer space and under water, accompanied by a limited moratorium—for example, six months—pending an agreement on underground tests. There should also be an agreement about underground explosions above a specific seismic magnitude and the threshold should be lowered as technical progress warranted.

Soviet Proposal for “Black Boxes”

On 10 December, the Soviet Union, offering what it described as additional guarantees for the effectiveness of control, proposed the

use of automatic seismic stations (“black boxes”) in addition to existing manned national means of detection. Two or three such stations, the Soviet Union said, could be established on the territories of each of the nuclear powers and some in the neighbouring countries. In the USSR, there were three major seismic zones—the Far East, Central Asia and the Altai mountain region—where “black boxes” could usefully be located. The sealed boxes containing the instruments would be periodically replaced and carried from and to the headquarters of the international commission by Soviet personnel on Soviet aircraft, but personnel of the international body could participate in the delivery and removal of the “black boxes” with appropriate precautionary measures.

The United States agreed that the “black boxes” might be a useful adjunct to manned detection stations if used in sufficient numbers and if properly equipped, operated and located. It also noted that the proposed participation of international personnel in the placing and retrieval of the boxes had many interesting aspects. But, it stated that such stations would not substantially decrease the number of significant unidentified events nor eliminate the need for manned stations or on-site inspection.

The United Kingdom formally proposed that the whole question be examined by experts, without any pre-conditions. The Soviet Union rejected the proposal, insisting that the United Kingdom and the United States first accept the idea of “black boxes” in principle before there was any discussion of details. These were the respective positions of the Soviet Union, the United Kingdom and the United States when the ENDC went into recess on 20 December 1962. The three-Power Sub-Committee on nuclear testing did not meet thereafter.

Consideration by the General Assembly 1962

Two resolutions emerged from the discussion at the General Assembly’s seventeenth session, in the latter part of 1962, on the question of discontinuing nuclear weapon tests, a question which had been proposed for the agenda by India.⁴ By a 37-Power draft resolution,⁵ the Assembly would condemn all nuclear weapon tests and ask that they cease immediately and not later than 1 January 1963, and would endorse the eight-nation joint memorandum of 16 April 1962 as a basis for negotiations.

By a United Kingdom-United States resolution,⁶ the Assembly would urge the ENDC to agree on a treaty with effective and prompt

international verification prohibiting nuclear weapon tests in all environments for all time and, if such agreement was not reached expeditiously, to seek agreement on an interim treaty prohibiting nuclear weapon tests in the atmosphere, in the oceans and in outer space.

During the debate, the United States and the United Kingdom stressed the feasibility and benefits of immediately concluding a treaty limited to tests in the atmosphere, under water and in outer space without any international control, and with no commitments on underground tests except for continued negotiations. In the light of subsequent discussion, however, the sponsors later withdrew the paragraph, in their draft resolution, on an interim treaty. As to a comprehensive solution, they pressed for the terms set out in their draft comprehensive treaty of 27 August 1962 calling for a quota of mandatory on-site inspections in the event of suspicious underground events. The Soviet Union stressed the desirability of a comprehensive solution and called for an agreement among all powers possessing nuclear weapons on the basis of the eight-nation joint memorandum. The Soviet Union said it would agree to a partial treaty on the understanding that underground tests should not be carried out while negotiations continued and until agreement was reached.

The provision for the cessation of all tests by 1 January 1963 was explicitly supported by the Soviet Union. The United Kingdom and the United States rejected any form of an uninspected moratorium.

As regards the question of on-site inspection, the United States and the United Kingdom maintained that identification of underground tests was difficult because seismological signals from such explosions were often indistinguishable from those associated with numerous small earthquakes. They considered that no fewer than twelve on-site inspections per year on the territory of the USSR were necessary in order to establish whether suspicious seismic signals had originated from a nuclear explosion or an earthquake. They offered to have scientists report on the technical aspects of the problem.

The Soviet Union maintained that national means at the disposal of States were sufficient to detect and identify all underground tests; it opposed the establishment of a technical body or conference of scientists to study the matter, since it was a political problem. The Soviet Union also maintained that, in the present state of international relations, States could not freely exchange data or give information on detection or verification machinery.

Sweden stated that under any solution it would be necessary to develop reliable technical methods for the identification of seismic events, and stressed the need, both for independent national and for joint seismological research.

On 6 November 1962, the Assembly adopted the 37-Power draft by 75 votes to 0, with 21 abstentions, as resolution 1762 A (XVII) and the United Kingdom-United States draft, as amended, by 51 votes to 10, with 40 abstentions, as resolution 1762 B (XVII).⁷ The resolution reads as follows:

A

The General Assembly,

Deeply concerned with the continuation of nuclear weapon tests,

Fully conscious that world opinion demands the immediate cessation of all nuclear tests,

Viewing with the utmost apprehension the data contained in the report of the United Nations Scientific Committee on the Effects of Atomic Radiation,

Considering that the continuation of nuclear weapon tests is an important factor in the acceleration of the arms race and that the conclusion of an agreement prohibiting such tests would greatly contribute to paving the way towards general and complete disarmament,

Recalling its resolution 1648 (XVI) of 6 November 1961, whereby the States concerned were urged to refrain from further nuclear weapon test explosions pending the conclusion of necessary internationally binding agreements with regard to the cessation of tests,

Noting with regret that the States concerned have not responded to the appeal contained in the aforementioned and in other relevant resolutions and that, despite its efforts, the conference of the Eighteen-Nation Committee on Disarmament, referred to in General Assembly resolution 1722 (XVI) of 20 December 1961, is not yet in a position to report agreement on this vitally important issue,

Recalling that, in resolution 1649 (XVI) of 8 November 1961, the General Assembly reaffirmed that an agreement prohibiting all nuclear weapon tests would inhibit the spread of nuclear weapons to other countries and would contribute to the reduction of international tensions,

Noting that, among the States represented in the Sub-Committee on a Treaty for the Discontinuance of Nuclear Weapon Tests of the

Eighteen-Nation Committee, basic agreement now prevails as regards the question of control of tests in the atmosphere, in outer space and under water,

Noting further that the proceedings of the Eighteen-Nation Committee indicate a somewhat enlarged area of agreement on the question of effective control of underground tests,

Considering that the memorandum of 16 April 1962, submitted to the Eighteen-Nation Committee by the delegations of Brazil, Burma, Ethiopia India, Mexico, Nigeria, Sweden and the United Arab Republic, represents a sound, adequate and fair basis for the conduct of negotiations towards removing the outstanding differences on the question of effective control of underground tests,

Welcoming the intention to find a speedy settlement of the remaining differences on the question of the cessation of nuclear tests, declared in the letter dated 27 October 1962 from Khrushchev, Chairman of the Council of Ministers of the Union of Soviet Socialist Republics, to Kennedy, President of the United States of America, in the letter dated 28 October 1962 from Kennedy to Khrushchev, and in the letter dated 28 October 1962 from Macmillan, Prime Minister of the United Kingdom of Great Britain and Northern Ireland, to Khrushchev,

Convinced that no efforts should be spared to achieve prompt agreement on the cessation of all nuclear tests in all environments.

1. *Condemns* all nuclear weapon tests;
2. *Asks* that such tests should cease immediately and not later than 1 January 1963;
3. *Urges* the Governments of the Union of Soviet Socialist Republics, the United Kingdom of Great Britain and Northern Ireland and the United States of America to settle the remaining differences between them in order to achieve agreement on the cessation of nuclear testing by 1 January 1963, and to issue instructions to their representatives on the Sub-Committee on a Treaty for the Discontinuance of Nuclear Weapon Tests to achieve this end;
4. *Endorses* the eight-nation memorandum of 16 April 1962 as a basis for negotiation;
5. *Calls upon* the parties concerned, taking as a basis the above-mentioned memorandum and having regard to the discussions on this item at the seventeenth session of the General Assembly,

to negotiate in a spirit of mutual understanding and concession in order to reach agreement urgently, bearing in mind the vital interests of mankind;

6. *Recommends* that if, against all hope, the parties concerned do not reach agreement on the cessation of all tests by 1 January 1963, they should enter into an immediate agreement prohibiting nuclear weapon tests in the atmosphere, in outer space and under water, accompanied by an interim arrangement suspending all underground tests, taking as a basis the eight-nation memorandum and taking into consideration other proposals presented at the seventeenth session of the General Assembly, such interim agreement to include adequate assurances for effective detection and identification of seismic events by an international scientific commission;
7. *Requests* the Conference of the Eighteen-Nation Committee on Disarmament to reconvene not later than 12 November 1962, to resume negotiations on the cessation of nuclear testing and on general and complete disarmament, and to report to the General Assembly by 10 December 1962 on the results achieved with regard to the cessation of nuclear weapon tests.

B

The General Assembly,

Believing that a cessation of nuclear weapon tests is the concern of all peoples and all nations,

Declaring it imperative that an agreement prohibiting nuclear weapon tests for all time should be concluded as rapidly as possible,

Recalling its resolutions 1648 (XVI) of 6 November 1961 and 1649 (XVI) of 8 November 1961,

Profoundly regretting that the agreements called for in those resolutions have not yet been achieved,

Noting that the endeavour to negotiate a nuclear test ban agreement has been taking place at the Conference of the Eighteen-Nation Committee on Disarmament,

Noting that the discussions and negotiations at Geneva are based on the draft treaty submitted on 28 November 1961 by the Union of Soviet Socialist Republics, the memorandum submitted on 16 April 1962 by Brazil, Burma, Ethiopia, India, Mexico, Nigeria, Sweden and the United Arab Republic and the comprehensive and limited draft

treaties submitted on 27 August 1962 by the United Kingdom of Great Britain and Northern Ireland and the United States of America,

1. *Urges* the conference of the Eighteen-Nation Committee on Disarmament to seek the conclusion of a treaty with effective and prompt international verification which prohibits nuclear weapon tests in all environments for all time;
2. *Requests* the negotiating powers to agree upon an early date on which a treaty prohibiting nuclear weapon tests shall enter into force;
3. *Notes* the discussions and documents regarding nuclear testing contained in the two reports of the Conference;
4. *Requests* the Secretary-General to bring to the attention of the Eighteen-Nation Committee the records of the seventeenth session of the General Assembly relating to the suspension of nuclear testing.

Eighteen-Nation Committee on Disarmament 1963

When the Eighteen-Nation Committee on Disarmament reconvened on 12 February 1963, it concentrated on a comprehensive treaty banning tests in all environments. The discussion revealed that there was agreement mainly on the following principles: (a) utilisation of nationally manned and nationally controlled seismic stations for detection and identification of seismic events; (b) installation of automatic (unmanned) seismic stations in the territories of nuclear Powers and adjacent countries, as a check on the proper functioning of the nationally manned stations, with the understanding that delivery and removal of equipment and records of these stations would be carried out with the participation of foreign personnel under arrangements safeguarding the security of the States concerned; and (c) an annual quota of on-site inspections as a means to determine the nature of suspicious events. There was disagreement on the number of annual inspections and on the number of automatic seismic stations. The Soviet Union proposed two to three on-site inspections a year; the United States proposed eight to ten, a figure which was later reduced to seven on condition that the verification system eventually elaborated would be effective. The Soviet Union proposed the establishment of three automatic seismic stations; the United States proposed seven such stations.

Concerning the method of discussion, the United States said that, in order to fix finally the quota of on-site inspections and the number of automatic stations, the following matters would first have to be

technically explored and agreed upon: composition of inspection teams, criteria of eligibility of events for inspection, area to be covered by each inspection, arrangements for choosing events for inspection, and location of automatic stations and their equipment. The Soviet Union insisted on prior agreement on the number of on-site inspections and automatic stations, arguing that those were the main questions and should be settled first, and that examination of details of control before the principal issues had been settled would create additional obstacles, protract negotiations and delay agreement.

On 1 April 1963, the United States and the United Kingdom submitted a memorandum concerning the cessation of nuclear weapon tests which dealt mainly with arrangements for the conduct of on-site inspection.⁸ The main feature of the memorandum was the concept of reciprocal inspection—one nuclear side would, within the limits of the quota, designate and select events for inspection and would play a primary role in the inspection arrangements in the territory of the other.

The Soviet Union and its allies refused to discuss the memorandum, stating that it constituted an attempt to avoid solution of the main issues and to steer the Conference into fruitless debate over technical details.

The eight non-aligned members of the ENDC refrained from commenting on the numbers and modalities of inspections, but made several suggestions for the simultaneous consideration of a few selected fundamental issues of inspection arrangements, including the quota of inspections. They appealed to the nuclear Powers to find a way out of the impasse, stressing that the differences between them were small and not difficult to overcome.

On 10 June 1963, Ethiopia, Nigeria and the United Arab Republic submitted a joint memorandum⁹ which expressed the conviction that direct talks between the Foreign Ministers, and possibly between the Heads of Government, of the nuclear powers might prove of great value in reaching a solution of the problem. Although science might in the future show that on-site inspections would no longer be needed to identify suspicious seismic events, the three African countries considered that for the time being “three, four or so” truly effective inspections a year, or an adequately proportionate figure spread over more years, might be needed to dispel mutual suspicions and to facilitate reaching a settlement. Such a compromise quota of inspections would be contingent upon agreement on adequate and effective modalities of inspection.

Partial Test Ban Treaty Signed in Moscow 5 August 1963

On 10 June, it was announced that the Soviet Union, the United States and the United Kingdom had agreed to hold talks in Moscow in mid-July on the cessation of nuclear tests. In a speech in East Berlin on 2 July, Premier Khrushchev said that the United States and United Kingdom insistence on on-site inspections made an underground ban impossible; the Soviet Union was, therefore, prepared to sign a limited treaty banning tests in the three non-controversial environments—in the atmosphere, in outer space and under water. The Moscow negotiations began on 15 July with the object of achieving agreement on such a partial nuclear test ban.

At the Moscow talks, the Soviet Union did not insist on its previous demand that a partial test ban must be accompanied by a moratorium on underground testing. Agreement was reached on the text of a treaty banning nuclear weapon tests in the atmosphere, in outer space and under water. The treaty was initialled on 25 July and was signed in Moscow on 5 August 1963 by the Foreign Ministers of the three nuclear Powers, in the presence of the Secretary-General of the United Nations. [For *text of the Treaty*, see *appendix VI*.] By the end of 1966, 116 countries, including 109 Members of the United Nations, had signed or acceded to the treaty in one or more of the capitals of the three original parties. France and the People's Republic of China have not become parties to the treaty.

In the preamble to the treaty, the signatories declare that they are “seeking to achieve the discontinuance of all test explosions of nuclear weapons for all time, determined to continue negotiations to this end...”. Article I bans tests in the atmosphere, in outer space and under water and “in any other environment if such explosion causes radio-active debris to be present outside the territorial limits of the State under whose jurisdiction or control such explosion is conducted”. Article IV establishes the right of withdrawal: “Each party shall... have the right to withdraw from the treaty if it decides that extraordinary events, related to the subject matter of this treaty, have jeopardised the supreme interests of its country”. Three months notice must be given. The partial test ban treaty entered into force on 10 October; on 15 October, the three Governments transmitted the treaty to the Secretary-General for registration, in accordance with Article 102 of the Charter.

Consideration by the General Assembly 1963

In the course of the general debate in plenary at the eighteenth session of the General Assembly, virtually all speakers welcomed the

signing of the treaty, which was generally viewed as a reflection of and contribution to an improvement in international relations, as well as a first step towards disarmament. Albania, however, criticised the treaty because it would guarantee the present nuclear Powers a profitable *status quo*, prevent others from developing legitimate defence systems and engender dangerous illusions. Cuba explained that it could not sign the treaty because one of the signatories continued an undeclared war against it. Cambodia welcomed the treaty as proof of the relaxation of tensions, but said it would not sign because the question of testing did not arise for it and because its constitution prohibited adherence to military treaties and pacts.

The Soviet Union stated that it was prepared to continue efforts to complete the treaty by suitable provisions banning all tests, but it would not be prepared to accept any inspections as they were not necessary. Agreement would be possible, the Soviet Union stated, as soon as the West abandoned its demand for controls, since national instrumentation was adequate.

The eighteenth session had before it only one draft resolution on the question of banning nuclear tests.¹⁰ The draft was submitted by the seventeen participants in the ENDC —Brazil, Bulgaria, Burma, Canada, Czechoslovakia, Ethiopia, India, Italy, Mexico, Nigeria, Poland, Romania, Sweden, the USSR, the United Arab Republic, the United Kingdom and the United States—and was subsequently co-sponsored by Afghanistan, Argentina, Australia, Byelorussian SSR, Cameroon, Chile, Japan, Netherlands, New Zealand, Sierra Leone, Turkey, Ukrainian SSR and Yugoslavia. By the joint draft resolution, the General Assembly would call upon all States to become parties to the treaty and request the ENDC to continue negotiations to achieve the objectives set forth in the preamble of the treaty. The draft resolution was adopted by the General Assembly on 27 November 1963, by 104 votes to 1, with 3 abstentions, as resolution 1910 (XVIII). It reads as follows:

The General Assembly,

Fully aware of its responsibility with regard to the question of nuclear weapon testing and of the views of world public opinion on this matter,

Noting with approval the treaty banning nuclear weapon tests in the atmosphere, in outer space and under water, signed on 5 August 1963 by the Union of Soviet Socialist Republics, the United Kingdom of Great Britain and Northern Ireland and the United States of America, and subsequently by a great number of other countries,

Noting further with satisfaction that in the preamble of that treaty the parties state that they are seeking to achieve the discontinuance of all test explosions of nuclear weapons for all time and are determined to continue negotiations to this end,

1. *Calls upon* all States to become parties to the treaty banning nuclear weapon tests in the atmosphere, in outer space and under water, and to abide by its spirit and provisions;
2. *Requests* the Conference of the Eighteen-Nation Committee on Disarmament to continue with a sense of urgency its negotiations to achieve the objectives set forth in the preamble of the treaty;
3. *Requests* the Eighteen-Nation Committee to report to the General Assembly at the earliest possible date and, in any event, not later than at the nineteenth session;
4. *Requests* the Secretary-General to make available to the Eighteen-Nation Committee the documents and records of the plenary meetings of the General Assembly and the meetings of the First Committee at which the item relating to nuclear testing was discussed.

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EFFORTS TO ACHIEVE A COMPREHENSIVE NUCLEAR TEST BAN, 1964-1970

Developments in 1964-1965

Underground nuclear testing by the nuclear powers signatories of the Moscow treaty continued after the signing of the treaty.

At the 1964 session of the Eighteen-Nation Committee on Disarmament, the three original parties to the treaty issued a statement¹ on 6 August, the anniversary of the signing of the treaty, in which the sponsors declared their intention “to do everything possible for the solution through negotiations of unresolved international problems”. The statement, however, omitted any explicit reference to extending the treaty to underground tests.

On 14 September 1964, the eight non-aligned members of the ENDC submitted a joint memorandum² on the Moscow treaty in which they expressed the hope that all States would adhere to it; regretted that no progress had been made towards completing the ban; noted that all nuclear test explosions were condemned by General Assembly resolution 1762 (XVII); and urged the nuclear Powers to press on with negotiations to extend the ban, noting that such steps could, in the view of the non-aligned members, be facilitated by an exchange of scientific and other information between the nuclear Powers and by the improvement of techniques.

Several weeks prior to the opening of the General Assembly’s nineteenth session, the People’s Republic of China, on 16 October 1964, exploded its first nuclear device in the atmosphere, an event deplored by almost all the members of the General Assembly. Many spokesmen from non-aligned countries were critical of the continued underground nuclear testing by the nuclear Powers which were Members of the United Nations. The United Arab Republic observed, in particular,

that underground nuclear explosions had not been legalised by their exclusion from the Moscow treaty.

The General Assembly took no formal action on the banning of nuclear test explosions at the nineteenth session, owing to the special circumstances prevailing at that session in connexion with the possible application of Article 19 of the Charter.

The Disarmament Commission, which met from 21 April to 16 June 1965, the first time it had met since 1960, reviewed the situation in the endc. The United Kingdom and the United States insisted that, despite progress in detection and identification capabilities, some on-site inspection was still required. The Soviet Union maintained that the only obstacle to a comprehensive test ban was the United States refusal, politically motivated, to recognize that national means of detection were adequate for policing an underground test ban.

The second atmospheric explosion conducted by the People's Republic of China on 14 May was deplored by members of the Disarmament Commission.

The resolution finally adopted by the commission³ recommended, *inter alia*, that the ENDC should consider as a matter of priority the extension of the partial test ban treaty to cover underground tests.

When the ENDC met from 27 July to 16 September 1965, a number of papers were submitted concerning an underground test ban. A Swedish memorandum⁴ formally proposed international co-operation in the detection of underground explosions by the exchange of seismic data ("the detection club"). A United Kingdom paper⁵ reported on experiments with arrays of seismographs sited in deep bore-holes in a carefully selected area some 10 to 25 kilometres long. Such arrays could detect nuclear explosions at a distance of 3,000 kilometres, as compared with the 1,000-kilometre range accepted by the 1958 Geneva conference of experts. A system based on such arrays would, however, the United Kingdom paper reported, still leave undetected a residue of seismic events at or above seismic magnitude 4.0.

In the course of the discussions,⁶ the United Arab Republic suggested that agreement be reached on a partial underground test ban covering events of seismic magnitude of 4.75 and above, coupled with a moratorium on underground testing below that magnitude and the exchange of scientific information among the nuclear Powers on the identification of under-ground tests. The Soviet Union declared itself ready to accept such a ban and moratorium. The United States supported

the exchange of scientific information but reiterated its opposition to an unverified moratorium.

On 15 September 1965, the eight non-aligned countries represented in the ENDC submitted a joint memorandum on a comprehensive test ban treaty⁷ in which they urged the nuclear Powers to take immediate steps to reach agreement on banning all nuclear weapon tests; expressed the belief that agreement could be facilitated by the exchange of scientific and other information between the nuclear Powers or by the improvement of detection and identification techniques; and reiterated their appeal to the Powers concerned to suspend forthwith tests in all environments.

Consideration by the General Assembly 1965

In the discussion at the twentieth session of the General Assembly, in 1965, the Soviet Union and its allies urged the extension of the Moscow treaty to cover underground tests on the basis of national means of detection and identification, while the United States and its allies asserted that on-site inspection was still required to supervise a ban on underground testing. Many countries endorsed Sweden's proposal for the establishment of a world-wide network of technically advanced seismological stations to form a 'detection club'. A number of countries urged the banning of underground tests above a specific threshold which could be policed by national means of detection, some linking their proposal to a moratorium on underground tests below the threshold. The Soviet Union reiterated its support for the United Arab Republic's proposal, made in the endc, that an underground ban should cover tests above a threshold of 4.75 seismic magnitude provided that there was a moratorium on tests below that threshold.

The United States announced that a world-wide system of 10 to 12 seismic arrays, similar to a United States Large Aperture Seismic Array (lasa) consisting of 525 seismometers, would detect underground events of yields of only hundreds of tons. Such a system would actually identify 80 per cent of natural events of energies of a few kilotons, but would not identify the remaining 20 per cent; this would imply some forty-five unidentified events in Soviet territory each year and hence some on-site inspections would still be required. Sweden was of the opinion that recent technological advances significantly reduced the political risks associated with an underground test ban.

On 3 December 1965, the General Assembly adopted resolution 2032 (XX), on the basis of a 35-Power draft, by 92 votes to 1, with 14 abstentions. It reads as follows:

The General Assembly,

Having considered the question of the cessation of nuclear and thermo-nuclear weapon tests and the relevant sections of the reports of the Conference of the Eighteen-Nation Committee on Disarmament,

Recalling its resolutions 1762 (XVII) of 6 November 1962 and 1910 (XVIII) of 27 November 1963 on the cessation of all test explosions of nuclear weapons,

Noting with regret that notwithstanding these resolutions nuclear weapon tests have taken place,

Recalling the undertaking given by the original signatories to the treaty banning nuclear weapon tests in the atmosphere, in outer space and under water, signed at Moscow on 5 August 1963, to continue negotiations for the discontinuance of all test explosions of nuclear weapons for all time,

Recognising the mounting concern of world opinion for the fulfilment of this undertaking,

Mindful of the crucial importance of a comprehensive test ban to the issue of non-proliferation of nuclear weapons,

Noting with satisfaction the joint memorandum on a comprehensive test ban treaty submitted by Brazil, Burma, Ethiopia, India, Mexico, Nigeria, Sweden and the United Arab Republic and annexed to the report of the conference of the Eighteen-Nation Committee on Disarmament,

Convinced that agreement in regard to taking this further step towards nuclear disarmament would be facilitated, *inter alia*, by the important improvements made in detection and identification techniques,

1. Urges that all nuclear weapon tests be suspended;
2. Calls *upon* all countries to respect the spirit and provisions of the treaty banning nuclear weapon tests in the atmosphere, in outer space and under water;
3. *Requests* the Conference of the Eighteen-Nation Committee on Disarmament to continue with a sense of urgency its work on a comprehensive test ban treaty and on arrangements to ban effectively all nuclear weapon tests in all environments, taking into account the improved possibilities for international co-operation in the field of seismic detection, and to report to the General Assembly.

Eighteen-Nation Committee on Disarmament 1966

At the 1966 session of the endc, disagreement persisted between the USSR and the United States as to what would constitute an adequate verification system for a comprehensive on Disarmament test ban treaty. The USSR reiterated its position that national 1966 means of detecting and identifying underground seismic events were adequate, while the United States considered that progress in the field of detection and identification of underground seismic events had not reached the point where on-site inspection could be totally dispensed with. The United States stated, however, that it would ask for only that number and kind of inspection which were necessary to assure that the treaty was being faithfully observed.

Sweden proposed an arrangement referred to as “verification by challenge”, under which a party suspected of having conducted an underground test, in violation of the treaty, would be expected voluntarily to offer clarifying information to allay suspicion, the assumption being that the suspected party would itself be vitally interested in establishing its innocence. An “invitation to inspection” might be forthcoming spontaneously in some instances and under pressure in more severe cases of doubt. If such a challenge went unheeded on several occasions, other parties to the treaty would acquire the right to withdraw from it. Parties could withdraw by giving three months’ advance notification of their intention to withdraw to other parties as well as to the United Nations Security Council, accompanied by documentary evidence of the “extraordinary event” justifying their withdrawal. The threat of withdrawal might induce the accused party to offer clarification of the suspected event, or if the accusation persisted, to ‘invite inspection. The system of “verification by challenge” would be useful whether or not obligatory inspections were envisaged in the treaty. If obligatory inspections were envisaged, “verification by challenge” would help reduce the size of the unresolved problem, and if inspection were not envisaged, it would help resolve suspicions.

The United Kingdom favoured the concept of “verification by challenge”, but preferred that it be called “verification by consent”. The United States at first stated that such a system was unacceptable, as it amounted to an unverified moratorium, and that fundamental differences regarding inspections must be resolved before a treaty could be concluded; later, however, It stated that it was studying the suggestion. The USSR considered the proposal to be a disguised form of international inspection and therefore unacceptable.

The United Arab Republic recalled its proposal in the ENDC, in 1965, for a treaty banning underground tests above the "threshold" of seismic magnitude 4.75 and a moratorium on tests below the "threshold". Burma urged consideration of a voluntary test suspension with verification by challenge.

India called on the Committee to devote its primary attention to the question of a comprehensive test ban, and also asked priority for making the Partial Test Ban Treaty universally binding. It suggested a comprehensive ban along the following lines: (1) immediate suspension of all tests pending a formal treaty; (2) a "threshold" treaty (4.75 or 4.80 seismic magnitude) providing for verification by challenge; (3) development of the trend for international exchange of seismological data; (4) continued scientific research concerning identification, so that the "threshold" could be lowered and ultimately eliminated.

On 17 August 1966, the eight non-aligned countries tabled a "Joint Memorandum on a Comprehensive Test Ban Treaty",⁸ in which they expressed their concern over the lack of progress on an underground test ban and stressed the dangers of continued atmospheric and underground testing. An underground test ban, they stated, would be an effective non-proliferation measure and, with the Partial Test Ban Treaty, would make development of nuclear weapons by non-nuclear States practically impossible and would inhibit the development of new nuclear weapons. On the issue of verification, the memorandum set forth the various suggestions already put forward individually by the non-aligned members and called on the nuclear powers to discontinue nuclear weapons tests pending conclusion of a comprehensive test ban treaty.

Consideration by the General Assembly 1966

In the discussion at the twenty-first session of the General Assembly, in 1966, many speakers deplored the continuation of nuclear testing in general, and some particularly regretted the continuation of tests in the atmosphere by the People's Republic of China and France. Some stressed the connexion between the continuation of tests and the development of new weapons, principally an anti-ballistic missile system, that they feared would have a destabilising effect on the world situation and would intensify the arms race. Several speakers draw attention to the close relationship between a comprehensive test ban and a treaty on the non-proliferation of nuclear weapons; and some stressed the view that an underground test ban must be the first step to follow a non-proliferation treaty.

The United States and the Soviet Union restated their respective positions on inspection; and the suggestions made by other Members of the General Assembly, along the general lines of those already put forward in the endc, failed to result in any movement towards agreement on this key point. However, a number of countries specifically supported the Swedish proposal of 1965 for the establishment of a "detection club" based on a world-wide network of technologically advanced seismological stations. The United States said it was following the efforts in this regard with special interest. The United Kingdom regarded the concept as an important step forward. The USSR thought the proposal deserved attention if it helped to facilitate an underground test ban without inspection. It considered, however, that the "detection club" should rely solely on national means of detection, voluntary submission of data and purely national evaluation of data. The Swedish proposal of "verification by challenge", put forward earlier in 1966 in the endc, was also welcomed by a number of countries.

The USSR reiterated its acceptance of the United Arab Republic's proposal for a "threshold ban" with an indefinite moratorium. A number of other countries favoured banning underground tests above a "threshold", but without a moratorium on tests below the suggested threshold. Others urged that the threshold should be progressively lowered as monitoring techniques improved.

On 5 December, the General Assembly, by 100 votes to 1, with 2 abstentions, adopted resolution 2163 (XXI), on the basis of a draft submitted by twelve countries, including the eight non-aligned members of the endc. It reads as follows:

The General Assembly,

Having considered the question of the cessation of nuclear and thermonuclear weapon tests and the report of the Conference of the Eighteen-Nation Committee on Disarmament,

Recalling its resolutions 1762 (XVII) of 6 November 1962, 1910 (XVIII) of 27 November 1963 and 2032 (XX) of 3 December 1965,

Recalling further the joint memorandum on a comprehensive-test ban treaty submitted by Brazil, Burma, Ethiopia, India, Mexico, Nigeria, Sweden and the United Arab Republic and annexed to the report of the Conference of the Eighteen-Nation Committee on Disarmament, and in particular the concrete suggestions contained therein,

Noting with great concern the fact that all States have not yet adhered to the treaty banning nuclear weapon tests in the atmosphere, in outer space and under water, signed in Moscow on 5 August 1963,

Noting also with great concern that nuclear weapon tests in the atmosphere and underground are continuing,

Taking into account the possibilities of establishing, through international co-operation, an exchange of seismic data so as to create a better scientific basis for national evaluation of seismic events,

Recognising the importance of seismology in the verification of the observance of a treaty banning underground nuclear weapon tests,

Realising that such a treaty would also constitute an effective measure to prevent the proliferation of nuclear weapons,

1. *Urges* all States which have not done so to adhere to the treaty banning nuclear weapon tests in the atmosphere, in outer space and under water;
2. *Calls upon* all nuclear weapon states to suspend nuclear weapon tests in all environments;
3. *Expresses the hope* that States will contribute to an effective international exchange of seismic data;
4. *Requests* the conference of the Eighteen-Nation Committee on Disarmament to elaborate without any further delay a treaty banning underground nuclear weapon tests.

Consideration by the General Assembly 1967

In view of its concentration on the elaboration of a treaty on the non-proliferation of nuclear weapons, during 1967 and the first part of 1968, the ENDC was unable to give extensive consideration to other matters. In its discussions on a comprehensive test ban, the basic positions remained unchanged.

At the twenty-second session of the General Assembly, the United States and the USSR restated their respective positions on inspection. Sweden again drew attention to improved verification possibilities through technical developments and international seismic data exchange, and referred to the use of statistical methods which would provide a sufficiently reliable control system to deter parties from violations. It urged that the problem of verification be approached from the standpoint of deterrence against violations rather than certainty of verification, and asserted that the question of control could no longer be used as a reason for holding up an underground test ban agreement. This viewpoint was supported by several members.

Australia, Canada, Japan, India and the United States were among those supporting the idea of international seismic cooperation to improve

detection. In view of the progress already achieved in verification methods, Canada hoped that such international co-operation would result in completely instrumented verification methods that would be generally acceptable. The USSR repeated that the “detection club” proposal deserved attention, if it were to lead to an underground test ban.

On 19 December 1967, the General Assembly adopted resolution 2343 (XXII) by 103 votes to 1, with 7 abstentions, as submitted by twenty co-sponsors, including the eight non-aligned members of the endc. It reads as follows:

The General Assembly,

Having considered the question of the urgent need for suspension of nuclear and thermonuclear tests and the interim report of the Conference of the Eighteen-Nation Committee on Disarmament,

Recalling its resolutions 1762 (XVII) of 6 November 1962, 1910 (XVIII) of 27 November 1963, 2032 (XX) of 3 December 1965 and 2163 (XXI) of 5 December 1966,

Noting with regret the fact that all States have not yet adhered to the treaty banning nuclear weapon tests in the atmosphere, in outer space and under water, signed in Moscow on 5 August 1963,

Noting with increasing concern that nuclear weapon tests in the atmosphere and underground are continuing,

Taking into account the existing possibilities of establishing, through international co-operation, an exchange of seismic data, so as to create a better scientific basis for national evaluation of seismic events,

Recognising the importance of seismology in the verification of the observance of a treaty banning underground nuclear weapon tests,

Realising that such a treaty would also constitute an effective measure to prevent the proliferation of nuclear weapons,

1. *Urges* all States which have not done so to adhere without further delay to the treaty banning nuclear weapon tests in the atmosphere, in outer space and under water;
2. *Calls upon* all nuclear weapon states to suspend nuclear weapon tests in all environments;
3. *Expresses the hope* that States will contribute to an effective international exchange of seismic data;
4. Requests the conference of the Eighteen-Nation Committee on Disarmament to take up as a matter of urgency the elaboration

of a treaty banning underground nuclear weapon tests and to report to the General Assembly on this matter at its twenty-third session.

Eighteen-Nation Committee on Disarmament 1968

In 1968, in adopting its provisional agenda, the ENDC included the cessation of nuclear testing among the measures which could be discussed under the item "Further measures relating to the cessation of the nuclear arms race and nuclear disarmament", the first agenda item.

On 29 July, Sweden circulated a report⁹ by the Stockholm International Peace Research Institute (SIPRI) which contained the scientific evaluation by a group of international experts of the capability of detecting and identifying underground nuclear explosions and indicating the progress made in that regard. Sweden asserted that the progress made in seismological identification of explosions should influence the political positions of the main parties. It proposed that the Committee should proceed to draft a text of an underground test ban treaty. India stressed the view that, in the light of the sipri report, an early agreement on a test ban should not await further scientific progress.

In a working paper, the United Kingdom suggested¹⁰ that the underground test ban treaty should envisage the establishment of a special committee of seven members to consider complaints and decide by a majority of 5 to 2 whether an on-site inspection was required. The inspecting group would be composed of the three nuclear Powers, three non-aligned States, and a nominee of the Secretary-General or of the Director-General of the International Atomic Energy Agency (IAEA). The United Kingdom believed that any State abiding by treaty provisions would never have to accept on-site inspection. The USSR, however, felt that the United Kingdom's proposal pre-supposed international inspection, which was contrary to its basic position.

The United Kingdom working paper also suggested that the treaty should provide for an agreed annual quota of permissible underground test explosions on a scale descending to nil over a period of four to five years. The USSR objected to the proposed quotas as tending to postpone a ban on underground testing for the suggested period of four to five years, and reaffirmed its support for a moratorium.

Canada and Sweden maintained that an underground test ban treaty would have to include provision for specific permission for each peaceful

nuclear explosion under an international regime for the peaceful utilisation of nuclear energy. India agreed that the underground test ban was directly linked to the issue of peaceful explosions and that the two should be considered together. In its view, total prohibition of nuclear explosions must apply to all States, nuclear and non-nuclear. Peaceful explosions would then be permitted under a separate international regime. It also stressed that the development of a nuclear excavation technology must not involve any modification of the Partial Test Ban Treaty, but be settled through a separately negotiated instrument within the context of a comprehensive test ban.

On 28 August, in another joint memorandum,¹¹ the eight non-aligned members of the ENDC stressed their concern that it had not so far been possible to reach agreement on a comprehensive test ban, that not all countries had so far adhered to the Partial Test Ban treaty and that atmospheric tests had in fact increased, resulting again in widespread radioactive contamination. They also deplored the high frequency and increasing yields of underground testing, which they felt was giving a new impetus to the arms race. They referred to reports that large underground tests had led to radioactive leakages outside the territorial limits of testing States, thus infringing upon the Partial Test Ban Treaty. Even if these incidents were not deliberate, they might weaken and endanger the existence of the Partial Test Ban Treaty.

The memorandum also noted the heavy costs involved in nuclear weapon testing, suggesting that the economic and technical resources, as well as the personnel involved in further development and sophistication of nuclear weapons, could be diverted to the needs of co-operation in the peaceful nuclear field if a comprehensive test ban were achieved. In the view of the non-aligned members, such a ban would constitute a declaration of the intention of the nuclear weapon powers to implement their commitments under the Partial Test Ban Treaty. While aware of the differences persisting between the nuclear powers on the question of verification, despite the progress in seismic technology, the non-aligned members viewed with apprehension the fact that no serious negotiation had taken place on the various possible solutions proposed in the endc. They endorsed the concept of an "organised international exchange of seismic data", which would help provide a better scientific basis for national evaluation of underground events. In their view, the close link existing between, the question of peaceful nuclear explosions, on the one hand, and both the non-proliferation treaty and a comprehensive test ban, on the other, enhanced the urgency of a "universal and comprehensive solution" of peaceful

explosions within the context of a comprehensive test ban treaty. They urged re-newed efforts to conclude such a treaty and suggested that, pending its conclusion, the nuclear weapon states take immediate steps for the discontinuance of all nuclear weapon tests.

Conference of Non-Nuclear Weapon States 1968

At the Conference of Non-Nuclear Weapon States, held in Geneva in 1968, several countries made reference to the urgent need to conclude a comprehensive test ban treaty. The Conference adopted a resolution,¹² requesting, *inter alia*, the General Assembly of the United Nations to recommend that the ENDC begin, not later than March 1969, to undertake negotiations for the conclusion of a comprehensive test ban treaty, "as a matter of high priority".

Consideration by the General Assembly 1968

At the twenty-third session of the General Assembly, most Members attached high priority to the conclusion of a comprehensive test ban, noting a link between such a ban and the treaty on the Non-Proliferation of Nuclear Weapons. Several Members deplored the continued testing in the atmosphere. Some specifically criticised France and the People's Republic of China in that connexion and urged greater efforts to obtain the participation of these two States in disarmament negotiations.

The USSR continued to maintain that national means of detection made it impossible for any country to conduct nuclear explosions in secret. Sweden again stated that improvements in seismic detection made it increasingly difficult to point to inadequacies in this field as an obstacle to an underground test ban; and many other members supported this general view. The United States, on the other hand, continued to hold that sizeable man-made explosions could still not be identified as such, despite progress in the verification field; stressing the need for further progress, it offered to announce some of its nuclear explosions in advance to facilitate an international exchange of identification data and subsequent analysis.

Most Members appeared to place their principal hope for closing the "verification gap" on further progress in identification methods. Some again stressed possible solutions that had already been put forward in the Eighteen-Nation Disarmament Committee and in the General Assembly, such as the development of a "detection club", agreement on a system of "verification by challenge", and a "threshold agreement", with or without a moratorium on all tests.

On 20 December, the General Assembly adopted by 108 votes to none, with 5 abstentions, resolution 2455 (XXIII), originally submitted by thirteen Powers, including the eight non-aligned members of the endc. The resolution reads as follows:

The General Assembly,

Having considered the question of the urgent need for suspension of nuclear and thermonuclear tests and the report of the Conference of the Eighteen-Nation Committee on Disarmament,

Recalling its resolutions 1762 (XVII) of 6 November 1962, 1910 (XVIII) of 27 November 1963, 2032 (XX) of 3 December 1965, 2163 (XXI) of 5 December 1966 and 2343 (XXII) of 19 December 1967,

Recalling further the joint memorandum on a comprehensive test ban treaty submitted on 26 August 1968 by Brazil, Burma, Ethiopia, India, Mexico, Nigeria, Sweden and the United Arab Republic and annexed to the report of the Conference of the Eighteen-Nation Committee on Disarmament,

Noting with regret the fact that all States have not yet adhered to the Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and under Water, signed in Moscow on 5 August 1963,

Noting with increasing concern that nuclear weapon tests in the atmosphere and underground are continuing,

Taking into account the existing possibilities of establishing, through international co-operation, a voluntary exchange of seismic data so as to create a better scientific basis for a national evaluation of seismic events,

Recognising the importance of seismology in the verification of the observance of a treaty banning underground nuclear weapon tests,

Noting in this connection that experts from various countries, including four nuclear weapon states, have recently met unofficially to exchange views and hold discussions in regard to the adequacy of seismic methods for monitoring underground explosions, and the hope expressed that such discussions would be continued,

1. *Urges* all States which have not done so to adhere without further delay to the Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and under Water;
2. *Calls upon* all nuclear weapon states to suspend nuclear weapon tests in all environments;

3. *Expresses the hope* that States will contribute to an effective international exchange of seismic data;
4. *Requests* the conference of the Eighteen-Nation Committee on Disarmament to take up as a matter of urgency the elaboration of a treaty banning underground nuclear weapon tests and to report to the General Assembly on this matter at its twenty-fourth session.

Eighteen-Nation Committee on Disarmament 1969

At the 1969 session of the ENDC, most members urged that the Committee give its immediate attention to the question of a comprehensive test ban.

Sweden submitted a working paper suggesting the possible provisions for a treaty banning underground tests (*for text of the working paper, see appendix XIII*). Each State party to the treaty, Sweden proposed, would undertake to prohibit, to prevent and not to carry out any underground nuclear weapon test explosion and, furthermore, to refrain from causing, encouraging or in any way participating in, the carrying out of any such explosion. Each party would also undertake to cooperate in good faith in an effective international exchange of seismological data in order to facilitate the detection, identification and location of underground events, as well as to cooperate for the clarification of all events pertaining to the subject matter of the treaty. A separate international agreement would be negotiated to regulate the question of nuclear explosions for peaceful purposes.

The Swedish working paper was welcomed by the majority of the Committee members, including all of the non-aligned members, but the proposals on verification were not entirely acceptable to the United States or the Soviet Union.

Japan proposed a ban on underground nuclear weapon tests above magnitude 4.75 as a first step, to be followed by co-operation on devising a system to monitor tests above magnitude 4.0 within a certain period of time. As the system of verification was perfected, agreement could be reached to ban all tests.

In a working paper, Nigeria suggested¹³ that the special committee to carry out on-site inspections envisaged in the working paper submitted by the United Kingdom in the ENDC the previous year, should be composed exclusively of non-aligned countries which had signed the treaty on the Non-Proliferation of Nuclear Weapons and which possessed

the technological know-how to cope with inspections. Brazil expressed reservations to this proposal.

On the related subject of nuclear explosions for peaceful purposes, Italy further elaborated, in a working paper, a number of suggestions it had put forth in 1968 for the separate treatment of military and peaceful nuclear explosions.¹⁴

In this general connexion, the Co-Chairmen informed the Committee of a joint communique" by the Soviet Union and the United States, issued at the close of a technical meeting in Vienna in early 1969, in which the view was expressed that underground explosions could be used "in the not so far off future" for oil and gas production, creation of underground cavities, etc.

The committee considered suggestions for establishing and improving, through international co-operation, a voluntary exchange of seismological data in order to create a better scientific basis for the evaluation of seismological events. Canada submitted a working paper,¹⁵ suggesting that requests be made to Governments by the United Nations for the provision of certain information in the context of setting up a world-wide exchange of seismological data. Other working papers¹⁶ on the general subject of seismological research were submitted by Canada, Sweden, the United Kingdom and the United States. The USSR also repeated its willingness to exchange seismic data within the so-called "detection club", if such action would facilitate the conclusion of a comprehensive treaty on the basis of national means of control.

Consideration by the General Assembly 1969

At the twenty-fourth session of the General Assembly, some Members expressed their dissatisfaction that the Partial Test Ban Treaty had not succeeded in reducing either the number of nuclear weapon tests, as underground testing continued, or the threat of an unacceptable level of atmospheric radioactive contamination, in view of continued atmospheric testing by France and the People's Republic of China. Deep concern was also expressed that the number of underground tests conducted by the Soviet Union and the United States had considerably increased in recent years, resulting in the development of new nuclear weapons. Several countries voiced the opinion that cessation of tests was primarily a political, rather than a technical problem. A number of countries expressed the view that progress in the bilateral strategic arms limitation talks between the Soviet Union and the United States would significantly improve the prospects for reaching agreement on a comprehensive test ban.

The issue of verification continued to constitute the major obstacle to any accord on the subject, the respective positions remaining substantially the same.

On 17 November, Australia, Brazil, Canada, Denmark, Finland, Japan, the Netherlands, Nigeria, Pakistan, Sweden and the United Kingdom submitted a draft resolution,¹⁷ which was subsequently co-sponsored by seventeen additional countries, requesting the Secretary-General to transmit to the Governments of all states members of the United Nations, or of any of the specialised agencies or of the IAEA or parties to the Statute of the International Court of Justice, a request for information of resources available for the establishment of a world-wide exchange on seismological data which would facilitate the achievement of a comprehensive test ban. Most countries supported the general lines of the draft resolution, but the Soviet Union objected to it. Mainly, the position of the Soviet Union was that it was prepared to undertake, on a voluntary basis, to exchange seismological data, but it objected to any compulsory exchange of information on seismic stations. On 16 October 1969, the draft was adopted by the Assembly by 99 votes to 7, with 13 abstentions, as resolution 2604 A (XXIV), which reads as follows:

The General Assembly,

Recognising the urgent need for the suspension of nuclear and thermonuclear weapon tests,

Recalling its resolutions 2163 (XXI) of 5 December 1966, 2343 (XXII) of 19 December 1967 and 2455 (XXIII) of 20 December 1968,

Recalling further that the above-mentioned resolutions expressed the hope that States would contribute to an effective international exchange of seismic data,

Having considered the report of 3 November 1969 submitted by the Conference of the Committee on Disarmament, and in particular those portions of it concerned with facilitating the achievement of a comprehensive test ban through the international exchange of seismic data, as well as other relevant proposals made in the Conference,

Noting the joint memoranda on a comprehensive test ban treaty submitted on 15 September 1965, 17 August 1966 and 26 August 1968 by Brazil, Burma, Ethiopia, India, Mexico, Nigeria, Sweden and the United Arab Republic, which have been annexed to reports of the Conference of the Eighteen-Nation Committee on Disarmament, and

all of which have suggested that the improvement of the international exchange of seismic data would facilitate the solution of the problem of verifying a comprehensive test ban,

Having studied the proposal submitted to the conference of the Committee on Disarmament concerning the provision of information by Governments in connexion with the creation of a worldwide exchange of seismological data to facilitate the achievement of a comprehensive test ban,

1. *Requests* the Secretary-General to transmit to the Governments of all States Members of the United Nations or members of any of the specialised agencies or of the International Atomic Energy Agency or parties to the Statute of the International Court of Justice, the request for information annexed to the present resolution;
2. *Invites* those Governments to co-operate with the Secretary-General in providing the information requested as soon as possible before 1 May 1970;
3. *Requests* the Secretary-General to circulate forthwith, upon receipt, all responses to those Governments mentioned in paragraph 1 above and to members of the conference of the Committee on Disarmament to assist the Conference in its further consideration of the achievement of a comprehensive test ban.

ANNEX

Request from the secretary-general of the united nations to the government of.....concerning the provision of certain information in the context of the creation of a world-wide exchange of seismological data which would facilitate the achievement of a comprehensive test ban

In order to assist in clarifying what resources would be available for the eventual establishment of an effective world-wide exchange of seismological information which would facilitate the achievement of a comprehensive test ban, the Secretary-General of the United Nations requests the Government of.....to supply to him, for transmission to the conference of the Committee on Disarmament, a list of all its seismic stations from which it would be prepared to supply records on the basis of guaranteed availability and to provide certain information about each station as set out below:

A. Conventional seismograph stations

1. Name of station and name and address of the operating organisation;
2. Co-ordinates of station, including elevation;
3. Instrumentation and components recorded together with speed of recording (this should include operational magnification at 1 second periods for short-period and broad-band seismographs and at 15 or 20 seconds for long-period instruments. A complete response curve in absolute units should also be provided).

The Government of.....is also requested to give information on the geological description of the station foundation and indicate if fully annotated records will be provided, including the precision of the time. It would also be useful to know the time window within which the Government of.....would be prepared to supply original records or good quality copies, and if the latter, the form of the copies (for example, 16, 35 or 70 millimetre film, Xerox copies etc.). It would be useful if it could be indicated whether the intention is to deposit copies of all records in a seismological centre which makes its data available to everyone, or whether the Government of.....wishes to guarantee the data only on a bilateral demand.

B. Array stations

1. Name of station and the name and address of the operating organisation;
2. Co-ordinates of station and array points, including elevation;
3. A general account of the instrumentation geometry of the array;
4. Instrumentation and components recorded, including magnetic tape specifications (this should include the operational magnification at 1 second periods for short-period or broad-band instrumentation and at 15 or 20 seconds for long-period instruments. A response curve in absolute units should be provided for each instrument);
5. A list of components which record on a parallel visual basis.

As under part A above, in the interest of obtaining maximum usefulness from an international exchange of data, the Government of.....is requested to give information on the geological foundation of the array stations, together with complete technical information on the recording medium, the precision of time-keeping, etc. It would

also be useful to know the time window within which the Government of..... would be prepared to supply the original records or, as applicable, photographic copy, magnetic tape copy or good quality microfilm. In the event that the Government of.....does not envisage depositing copies of all array data automatically in a seismological centre which makes its data available to everyone, it would be useful if the Government of.....could indicate how long an original magnetic tape recording could be made available for individual demands before the tapes are erased and re-used.

In view of the urgency in making progress in the direction of a solution for a comprehensive test ban, the Secretary-General would greatly appreciate it if the information requested above could be forwarded to him with the least possible delay for transmission to the Conference of the Committee on Disarmament.

On the general subject of a comprehensive test ban, a draft resolution was submitted by Brazil, Burma, Ethiopia, India, Mexico, Morocco, Nigeria, Sweden, the United Arab Republic and Yugoslavia, and subsequently co-sponsored by Chile, Ireland and Jamaica,¹³ whereby the General Assembly would urge all States which had not done so to adhere without further delay to the Partial Test Ban Treaty, call upon all nuclear weapon states to suspend nuclear weapon tests in all environments, and request the ccd to continue, as a matter of urgency, its deliberations en a treaty banning underground nuclear weapon tests, and to submit a special report to the General Assembly. On 16 December 1969, the General Assembly adopted this draft resolution, by a vote of 114 to 1, with 4 abstentions, as resolution 2604 B (XXIV), which reads as follows:

The General Assembly,

Having considered the question of the urgent need for suspension of nuclear and thermonuclear tests and the report of the Conference of the Committee on Disarmament,

Recalling its resolutions 1762 (XVII) of 6 November 1962, 1910 (XVIII) of 27 November 1963, 2032 (XX) of 3 December 1965, 2163 (XXI) of 5 December 1966, 2343 (XXII) of 19 December 1967 and 2455 (XXIII) of 20 December 1968,

Noting with regret the fact that all States have not yet adhered to the Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and under Water signed in Moscow on 5 August 1963,

Noting with increasing concern that nuclear weapon tests in the atmosphere and underground are continuing,

Taking into account that several concrete suggestions have recently been set forth in the conference of the Committee on Disarmament as to possible provisions for a treaty banning underground nuclear weapon tests,

1. *Urges* all States which have not done so to adhere without further delay to the Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and under Water;
2. *Calls upon* all nuclear weapon states to suspend nuclear weapon tests in all environments;
3. *Requests* the conference of the Committee on Disarmament to continue, as a matter of urgency, its deliberations on treaty banning underground nuclear weapon tests, taking into account the proposals already made in the Conference as to the contents of such a treaty, as well as the views expressed at the current session of the General Assembly, and to submit a special report to the Assembly on the results of its deliberations.

REFERENCES

1. *Official Records of the Disarmament Commission, Supplement for January to December 1964*, document DC/209, annex 1, ENDC/140.
2. *Ibid.*, ENDC/145.
3. *Official Records of the Disarmament Commission, Supplement for January to December 1965*, document DC/225.
4. *Ibid.*, document DC/227, annex 1, ENDC/154.
5. *Ibid.*, ENDC/155.
6. Documents ENDC/PV.224,230 and 231.
7. *Official Records of the Disarmament Commission, Supplement for January to December 1965*, document DC/227, annex 1, ENDC/159.
8. *Official Records of the Disarmament Commission, Supplement for 1966*, document DC/228, annex 1, ENDC/177.
9. *Official Records of the Disarmament Commission, Supplement for 1967 and 1968*, document DC/231, annex I, ENDC/230.
10. *Ibid.*, ENDC/232.
11. *Ibid.*, ENDC/235.
12. *Official Records of the General Assembly, Twenty-third Session*, agenda item 96, document A/7277, resolution C.

13. Document DC/232, annex C, ENDC/246.
14. *Official Records of the Disarmament Commission, Supplement for 1967 and 1968*, document DC/231, annex I, ENDC/234. Also, document DC/232, annex C, ENDC/250.
15. Document DC/232, annex C, ENDC/251 and Rev. 1.
16. *Ibid.*, ENDC/248, 257, 258 and 252.
17. Document A/7862, para. 6.
18. *Ibid.*, para. 7.

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THE PARTIAL TEST-BAN TREATY: A BRITISH VIEW

“During my talks with the President, when he was in London, I did my best to urge upon him the necessity for a comprehensive agreement banning all nuclear tests, whether underground or atmospheric...I told [the] President that we ought to take risks for so great a prize. We might be blessed by future ages as saviours of mankind, or we might be cursed like the man who made gran rifiuto.”

The British Prime Minister who took this view was Macmillan. The passage comes from his memoirs and refers to a meeting with President Eisenhower in 1959. It serves as a reminder that for the British Government of the day the subsequent achievement of the partial test-ban treaty in 1963 represented the failure of larger hopes.

Course of the Negotiations

For some time after the end of the Second World War the idea of banning nuclear tests was discussed only as part of much more comprehensive schemes for controlling atomic energy or for general and complete disarmament. By the beginning of the mid-fifties, these schemes had made little progress. Meanwhile, the testing of nuclear weapons had gone steadily forward. The Soviet Union and the United Kingdom joined the atomic club in 1949 and 1952, respectively, and thermonuclear devices were first tested by the United States and the Soviet Union in 1952 and 1953. With the advent of thermonuclear devices, the prospect loomed of larger and larger atmospheric tests, followed by the deployment of weapons with destructive capabilities far greater than those of their atomic predecessors. These potentialities first attracted public attention on a large scale during March 1954. On the first day of that month an American thermonuclear test at Bikini Atoll turned out to have twice the anticipated yield. Because of the

prevailing wind conditions, a Japanese fishing vessel, the Lucky Dragon, was showered with radioactive debris that caused severe radiation sickness among the crew, one of whom subsequently died. Inhabitants of the Marshall Islands were also affected. This event sparked the first calls for a ban on nuclear testing quite apart from any comprehensive scheme for controlling atomic energy or for general and complete disarmament. Many eminent individuals appealed for such a ban, but the first statesman to propose it was Jawaharlal Nehru. Speaking in the Indian Parliament on 2 April 1954, he reiterated India's hopes for complete nuclear disarmament, but called in the meantime for a "standstill agreement" on tests. It took another four years, however, before the Conference on the Discontinuance of Nuclear Weapon Tests opened in Geneva on 31 October 1958. The participants were the United States, the Soviet Union and the United Kingdom, at that time still the world's only nuclear weapon states.

The course of the negotiations has been chronicled in detail elsewhere, but it is necessary to give a broad outline of their development as a prelude to assessing the extent of the British contribution to their final product, the partial test-ban treaty. During the summer of 1958, a conference of experts was held in Geneva to study the methods of detecting violations of a possible agreement on the suspension of nuclear tests. The experts devised an elaborate control system (later known as "the Geneva System") which called for a world-wide network of internationally manned seismic control posts and provisions for on-site inspections. On the basis of this scheme, the experts announced in their final communique, issued on 21 August 1958, that they had "reached the conclusion that it is technically feasible to set up, with certain capabilities and limitations, a workable and effective control system for the detection of violations of a possible agreement on the worldwide cessation of nuclear weapons tests". The next day the United States and the United Kingdom announced that by 31 October they would be ready to enter into negotiations for a comprehensive ban and that they would refrain from further testing for one year from that date. The Soviet Union agreed to start negotiations on that date, but announced later that it would feel free to conduct tests until it had carried out an equivalent number to those of the United States and the United Kingdom. In practice, however, it ceased testing shortly after the negotiations began.

The negotiations ran into immediate difficulties. The Soviet Union wanted the three Powers to stop testing and then to agree on the

details of the control system. The Western Powers preferred to agree on the details of the control system before committing themselves to stop testing. There were also difficulties over the practical details of the control system. In particular, the Soviet Union wanted the right of veto over on-site inspections, while the United States insisted that they be veto-proof. There were also concerns about the detection and identification of high-altitude tests.

Further difficulties arose when the United States concluded from new data that had not been available to the Conference of Experts that it would be much harder to distinguish earthquakes from underground nuclear explosions than they had supposed. In April 1959 these difficulties led the United States to propose a ban on atmospheric testing up to an altitude of 50 km monitored by a simplified control system not involving on-site inspection. The Soviet Union quickly rejected this as inadequate but indicated some interest in exploring the idea of on-site inspections that could be veto-proof yet limited to a fixed number each year. The negotiations therefore continued to be aimed at a comprehensive test ban, but there were continuing doubts about the ability of the Geneva System to monitor such a ban. During the summer, these doubts were reinforced when a study by Albert Latter suggested that the seismic impact of an underground nuclear explosion could be reduced by detonating it in the centre of a large cavity. In order to resolve these difficulties, various improvements were sought to the Geneva System, but the Soviet Union proved unwilling to consider any major changes.

On 11 February 1960 the Western Powers adopted a new approach. Instead of continuing to press the Soviet Union, without success, for a comprehensive test ban monitored by an improved Geneva System, they proposed a treaty that would prohibit only those tests which could be verified by the original Geneva System, as they now judged its capabilities. The treaty would have prohibited all atmospheric and underwater tests, tests in space to the height at which detection was feasible, and underground tests producing signals with a seismic magnitude greater than 4.75. In addition, it was proposed that there should be a joint East-West seismic research programme to make it feasible to lower this threshold. The Soviet Union stated that it wished to see the treaty prohibit all tests in space and that, while the joint seismic research programme was in progress, there should be a moratorium on underground tests registering a seismic magnitude of less than 4.75.

This moratorium was to run for four to five years, after which the three nations would confer on whether to extend it. The Western powers agreed to accept a moratorium on underground tests below a seismic magnitude of 4.75, but only after a treaty banning all verifiable tests had been signed and the joint seismic research programme arranged. They were also unwilling to contemplate a moratorium of the length proposed by the Soviet Union. Nevertheless, the two sides seemed at this point to be drawing closer together and there were expectations that the four-Power summit in Paris in May 1960 might see major progress. In the wake of the U-2 incident, however, the summit was a failure and for the remainder of 1960 the negotiations marked time as the Eisenhower Presidency came to a close.

The new Kennedy Administration tried to give fresh momentum to the negotiations by tabling the first complete draft of a treaty on 18 April 1961. Although it still proposed a threshold for underground tests, it contained various modifications to the control system that were designed to meet Soviet concerns. The Soviet reaction was nevertheless negative. The reason for this became clear on 30 August, when the Soviet Union announced that it would resume nuclear testing and shocked the Western Powers by carrying out an atmospheric test almost immediately, on 1 September. An immediate Western proposal on 3 September for an atmospheric test ban to be monitored only by national means was swept aside as the Soviet Union proceeded with a large number of atmospheric tests in a short space of time (fifty were held by 4 November, including one of almost 60 megatons). The resulting pressures on President Kennedy to resume testing, at first only underground but then in the atmosphere as well, proved irresistible. As for the Geneva Conference, it adjourned on 9 September, met again briefly during the winter of 1961/62, but finally adjourned for good in 1962 when it became quite clear that there was no point in proceeding with it.

Subsequent discussion of the test ban issue took place in the newly-created Eighteen-Nation Disarmament Committee, comprised of five Western, five Eastern and eight non-aligned nations. It was in this forum, during August 1962, that the Western powers tabled two alternative draft treaties: one providing for a fully comprehensive test ban involving complex control provisions, the other providing for a partial test ban covering all but underground tests and involving only national means of detection. The Soviet Union rejected the draft comprehensive test ban because of its control provisions and the draft

partial test ban because it did not cover underground tests. Once again, therefore, the stalemate seemed complete.

However, the Cuban missile crisis in October 1962 led to an acutely sharpened awareness of the need for improved Super-Power relations. In the next few months the two sides began to edge towards agreement on a comprehensive test ban. The Soviet Union indicated a new willingness to accept a limited number of on-site inspections each year and the United States reduced the number of such inspections on which it had previously been insisting. Nevertheless, there remained a small but crucial difference between the two numbers. On 24 April 1963, in an effort to overcome this difference, Kennedy and Macmillan sent a joint letter to Khrushchev urging further efforts to conclude a test ban and suggesting that senior representatives of both men should travel to Moscow to discuss the subject further. After an exchange of correspondence, Khrushchev accepted this proposal on 8 June. On 10 June, Kennedy declared that the United States would not conduct any more tests in the atmosphere unless others did so, and on 29 June he visited Macmillan at his Birch Grove home to agree on a joint approach to the Moscow talks. The United States and United Kingdom teams left for Moscow on 15 July, led by Ambassador Averell Harriman and Lord Hailsham, respectively. At this stage, despite statements by Khrushchev which suggested that he was no longer prepared to accept any on-site inspections, it was still the intention of the Western Powers to try for a comprehensive test ban. Once Harriman and Hailsham arrived in Moscow, however, Khrushchev confirmed his new refusal to accept any on-site inspections. It was therefore quite plain that a comprehensive test ban was not a realistic objective. Consequently, attention focused on the negotiation of a partial test ban. The final text of the partial test-ban treaty was agreed on 25 July, the treaty was signed at the Foreign Minister level on 5 August, and on 10 October the three nuclear weapon states deposited their instruments of ratification with each other.

The rapidity with which the partial test ban was negotiated in Moscow should not obscure the fact that it was the last episode in a long-running saga. As noted above, different varieties of a partial test ban had already been suggested on several previous occasions: in April 1959, in September 1961, and in August 1962. It is also worth remembering that the final episode in Moscow was by no means as easy and straightforward as its short duration might imply. The Western Powers and the Soviet Union began by tabling rival drafts, and a number

of awkward issues had to be resolved before the partial test ban emerged in the form of the present treaty. The initial Soviet draft was simplicity itself. It had only two operative articles. The first said that each party undertook to discontinue test explosions in the prohibited environments: the atmosphere, outer space and under water. The second stated that the agreement would enter into force immediately upon ratification by the United States, the USSR, the United Kingdom and France (France had begun testing in 1960).

The rival Anglo-American draft was identical to the one they had proposed at the Eighteen-Nation Disarmament Committee in August 1962. It differed from the Soviet draft in three significant respects. It did not require the adherence of France before it entered into force (nor indeed Chinese adherence, even though there was increasing concern about China's nuclear intentions, a concern which proved to be soundly based when China also began testing in 1964). It provided that peaceful nuclear explosions could take place in the prohibited environments if they were unanimously agreed to and carried out in accordance with the provisions of an annex (which had yet to be completed). The Anglo-American draft also included a provision for withdrawal, whereas the Soviet draft did not. One further problem, not related to the substance of the treaty but which nevertheless had to be solved, was the difficulty of finding a mechanism by which States not recognised by one of the depositaries could still adhere to the treaty.

All these differences had to be reconciled or overcome during the Moscow negotiations. Harriman and Hailsham flatly insisted that entry into force could not be made dependent on French adherence. De Gaulle's firm opposition to any test ban meant that such a provision would make a nonsense of any agreement that might be reached, and, in due course, the Soviet Union agreed to drop this requirement. However, the Soviet Union did insist that the provision for peaceful nuclear explosions in the prohibited environments would arouse suspicion in other countries and reduce the appeal of the treaty. This attitude came as something of a surprise to the Western Powers, since they believed the Soviet Union had plans for such explosions just as extensive as their own. The Soviet Union also objected to the withdrawal clause on the grounds that it would raise doubts about the seriousness of the parties' intentions in signing the treaty and was in any case unnecessary since it was the inherent right of a sovereign nation to abrogate any treaty if and when the national interest required it. The United States responded by offering to give up the peaceful uses

provision in exchange for Soviet acceptance of a withdrawal clause. This deal became the basis of the treaty in its final form, after some hard bargaining about the precise language of the withdrawal clause. The problem of the adherence mechanism was solved by an oral understanding that a ratification or accession would be considered valid if it was received by any one of the three depositary Governments.

The British Contribution

The British contribution to this process has to be assessed with care. Considerable claims have been made for it. The Earl of Home, the Foreign Secretary, claimed at the time that "we would never have got that treaty unless the UK had been in a position to intervene". Lord Hailsham wrote later that "I do not myself believe that if Britain had been absent from that table a viable agreement would at that time have been negotiated, since Russian relations with the United States were far less relaxed then than now". Macmillan himself referred to it as "one of the great purposes which I had set myself." But what exactly was the nature of the British contribution?

It did not really lie in the Moscow negotiations themselves. Lord Hailsham generally followed Ambassador Harriman's lead, and a member of Hailsham's delegation dubbed Harriman "the great man of the meeting". Although there was one instance during the negotiations when Hailsham was alarmed enough about Harriman's stubborn insistence on a particular formulation of words for the withdrawal clause to get Macmillan on the telephone to Kennedy, it seems that this was not a decisive factor in how the Americans decided to play the issue. The British contribution really lay in the preceding years of hard toil, which had finally created the opportunity for the Moscow negotiations. Throughout that period the United States Government had been divided on the desirability of a test ban. By contrast, Macmillan and his Government were consistent advocates of it.

In early 1959, for example, when there seemed to be no middle way between the Soviet insistence on a veto over on-site inspection and the American insistence on veto-proof inspections, it was Macmillan who took up the proposal that they might be veto-free but suggested they be limited in number to a small annual quota, a proposal which he put to Khrushchev during his visit to Moscow in March 1959. Later, in the year Macmillan helped to persuade Eisenhower that there should be no resumption of testing by the Western powers when the year-long moratorium they had announced from 31 October 1958 expired. In early 1960, the Soviet Union rejected the United States proposal for

a threshold treaty unless accompanied by a moratorium on tests below the threshold. At that point Macmillan intervened strongly with Eisenhower to prevent the outright rejection of this response and to secure its acceptance for a limited period, subject to the pursuit of the joint seismic research programme. It was also Macmillan who persistently sought the four-Power summit in Paris, and its failure was a severe personal disappointment to him.

Macmillan had new opportunities, however, with the Kennedy Administration. Indeed, even before Kennedy's inauguration, Macmillan was once again pressing the case for a comprehensive test ban. His enthusiasm for another effort to secure a ban probably helped to ensure the tabling of the joint Anglo-American draft treaty in April 1961. When the Soviet Union resumed atmospheric testing later in the year, Macmillan argued that if the West did not respond in kind and continued to press for a test ban, then the Soviet Union would be forced to stop testing before it gained any significant military advantage. When it became clear that Kennedy could not resist the pressures for a resumption, it may have been pressure from Macmillan that ensured that the resumed tests were held only underground. As Kennedy came under increasing pressure to resume atmospheric testing as well, Macmillan continued to hold out against it. At Bermuda in December 1961, Kennedy and his advisers sought to overcome this opposition to renewed atmospheric testing. They argued that the resumed Soviet tests were part of a programme to develop an anti-missile missile, and that the United States needed to conduct similar tests. Macmillan and his advisers were sceptical about the feasibility of anti-missile missiles. They argued that there was still scope for one more effort to obtain a comprehensive test ban. In the end they did not prevail, but as preparations for resumed atmospheric testing proceeded, Macmillan continued to argue for coupling this resumption with a renewed effort to obtain a test ban. This persistent pressure may well have been a factor behind the tabling, in August 1962, of two alternative draft treaties, one for a comprehensive test ban and one for a partial test ban.

After the Cuban missile crisis of October 1962 and the Nassau Meeting in December 1962, Macmillan sought yet again to push forward with the test ban. When the Soviet attitude to on-site inspections suddenly became somewhat more forthcoming, he decided to make one more approach to Kennedy in a further effort to overcome the remaining difficulties. On 16 March 1963 he sent a long and wide-ranging letter to the President in which he recalled their past efforts to make progress,

including arguments designed to assist Kennedy with his internal battles, and pressed for a new move to break the deadlock. His specific proposal was that Kennedy should offer to send a personal representative to Moscow to clear the way for an agreement, perhaps at a new summit. He suggested that either the President's brother, Robert, or Averell Harriman might be suitable envoys. It was Kennedy's favourable response to this approach which led to the joint letter which both he and Macmillan sent to Khrushchev on 24 April and the acceptance of which—by Khrushchev—paved the way for the Harriman/Hailsham mission. Finally, while little is known for certain about Macmillan's meeting with Kennedy at Birch Grove on 29 June, it seems likely that he helped to convince the President that the Western Powers should go to Moscow with a continued willingness to sign a comprehensive test ban as well as a partial test ban.

Of course, it is important not to overemphasise the British contribution, particularly when those who play it up were the participants. But, one historian has recently concluded that "Britain pressed very hard indeed for a comprehensive test-ban treaty and her endeavours probably represented the high point of post-war British influence with the US and USSR". Nor was it just the British who thought they had played an important role. Glenn Seaborg, Professor and Associate Director of the Lawrence Berkeley Laboratory, comments in his memoirs that "considering their relative unimportance as a military force, particularly in nuclear weapons, it is remarkable to consider how much influence the British had over US arms and arms control policies during this period". And on the day he ratified the treaty, Kennedy wrote to Macmillan that he "could not but reflect on the extent to which your steadfastness of commitment and determined perseverance made this treaty possible". Having said all this, it remains the case, as Lord Hailsham has pointed out, that "obviously we would never have reached agreement if the two Great Powers had not basically wished for one and, within limits, thought it to their interest to conclude one".

The Value of the PTBT

The partial test-ban treaty has stood the test of time reasonably well. There have been venting incidents which have caused radioactive debris to be present outside the territorial limits of the Super-Powers, but for the most part it has been accepted on all sides that these incidents have been genuine mistakes and wholly unintended. In 1979, a question arose about whether there had been a nuclear explosion above the

South Atlantic, but as yet there is no conclusive evidence that the event recorded was a nuclear explosion. As for the single Indian nuclear explosion in 1974, this was conducted underground, and although France and China, unlike India, did not become parties to the treaty, they have in practice restricted themselves to underground testing since the close of 1974 and 1980, respectively. On balance, therefore, the partial test-ban treaty has been a success from the viewpoint of both compliance and its exemplary effect.

It is in other respects that the success of the treaty has been more generally questioned. It clearly falls short of the comprehensive test-ban treaty which Macmillan and his Government sought. Moreover, while the treaty may have had some impact on the development of anti-ballistic missile systems, and while the Americans did at first find underground testing "to be slow, costly and replete with unanticipated difficulties" it is generally accepted that in practice it has proved over time to have very little effect on the ability of its nuclear weapon state parties to develop new warheads. Consequently, the treaty has sometimes been regarded as little more than a clean air act. This criticism, however, overlooks the fundamental importance of clean air, and the fact that the treaty immediately allayed the widespread and legitimate concern about the effects of fall-out from atmospheric tests. It is worth remembering that fall-out from pre-treaty atmospheric tests remains the principal source of man-made radioactivity in the general environment. Modern research tends to attach more importance than was the case in the past to the dangers of such increases in low-level background radiation, from whatever source.

The main value of the partial test-ban treaty, however, has been its political significance rather than its military impact. It was signed eighteen years to the day after the obliteration of Hiroshima. Throughout those eighteen years, apart from a brief period in the mid-fifties, the cold war had dominated the international landscape. Crisis had succeeded crisis: Berlin in 1958/9, the U-2 incident in May 1960, the Bay of Pigs in April 1961, Berlin again in September 1961, and finally the Cuban missile crisis in October 1962. Over the whole unhappy scene lay the shadow of the nuclear bomb and the dreadful fear that, in Churchill's words, "in a few years this awful agency of destruction will be widespread and the catastrophe following from its use by several warring nations may not only bring to an end all that we call civilisation but may possibly disintegrate the globe itself". Into this scene the partial test-ban treaty broke, in Kennedy's words, like "a shaft of light cut through the darkness". It seemed a mark of determination on both

sides to draw back from the brink and to move forward into a new era in which East/West relations might be stabilised and nuclear weapons controlled. Apart from France and China, almost every other State expressed its hopes for the future by adhering to the treaty.

These hopes were not entirely misplaced. Much experience of the political and technical aspects of arms control talks had been gained, and the conclusion of the partial test-ban treaty was followed by intensive efforts to prevent the further proliferation of nuclear weapons. As a result, the treaty on the Non-Proliferation of Nuclear Weapons was opened for signature in July 1968, and on the same day the two major Powers announced that in the near future they would begin bilateral discussions on their strategic nuclear weapons. The opening of these talks was postponed when the Soviet Union intervened in Czechoslovakia in August 1968, but, after a decent interval, they began in November 1969 as the Strategic Arms Limitation Talks (SALT). It then took only until 1972 to produce both the anti-ballistic missile treaty and the SALT I interim agreement on offensive strategic missiles.

These agreements were immediately followed by the opening of the SALT II negotiations, and at Vladivostok in November 1974 the framework was agreed for a comprehensive agreement on offensive nuclear weapons covering bombers as well as missiles. 1974 and 1976 also saw the negotiation of two treaties limiting the Super-Powers to underground explosions not exceeding 150 kilotons (the threshold test-ban treaty, and the peaceful nuclear explosions treaty). Nor was progress confined to the sphere of nuclear arms control. The negotiation of the European treaties, the conclusion of the four-Power agreement on Berlin, the establishment of the mutual balanced force reduction talks, and the beginning of the Conference on Security and Co-operation in Europe produced a major relaxation of tensions in Europe and a burgeoning atmosphere of co-operation in Super-Power relations, marked symbolically in 1975 by the Apollo-Soyuz link-up.

In retrospect it is clear that the achievement of the partial test-ban treaty marked the beginning of this fruitful phase in East/West relations. As Hedley Bull so aptly put it:

“Between 1963 and 1974—from the PTB to the Vladivostok Accords—the superpowers...managed to create a structure of cooperation which, rudimentary although it was, was widely recognised throughout international society as a whole to embody hope, if not for the building of peace in any positive sense then at least for the avoidance of general nuclear war...It was improvised in response to new and unexpected dangers that gave them a sense of a common interest in survival. This

sense of a common interest in avoiding a ruinous nuclear war, which had developed at the height of the Cold War in the 1950s, came in the course of the 1960s and 1970s to be translated into at first inchoate rules or guidelines for the avoidance and control of crises and into understandings about arms control which later in some cases were institutionalised in formal agreements...The United States and Soviet Union, by drawing together in these years, did give the impression that they were creating at least the foundations of a more secure international order."

Hedley Bull was writing in 1980, and he proceeded to lament the end of this hopeful era. During the second half of the seventies, Soviet interventions in Angola, in Ethiopia, and finally in Afghanistan soured the international atmosphere and made it impossible to sustain the improvement in Super-Power relations. Despite the Carter Administration's strong commitment to arms control and the eventual signing of the SALT II Treaty, in June 1979, these activities undermined the political basis not only for ratification of this agreement but also for the successful pursuit of the renewed negotiations for a comprehensive test ban. Meanwhile, the threshold test-ban and peaceful nuclear explosions treaties remained unratified. The difficulties continued during the first half of the 1980s. But since the beginning of 1985, there have been new developments in East/West relations and a new dialogue about a whole range of subjects. The authors of the partial test-ban treaty would be pleased at this development. For Macmillan, certainly, the treaty was not just an arms control measure; it was also part of a much broader effort to defuse the East/West confrontation.

The Proposed Amendment

The new phase in East/West relations since the beginning of 1985 has seen renewed talks on nuclear testing. After discussion at the expert level, the two major Powers announced in September 1987 that they would start full-scale step-by-step negotiations on nuclear testing. It was stated that:

"...in these negotiations the sides as the first step will agree upon effective verification measures which will make it possible to ratify the US-USSR Threshold Test Ban Treaty of 1974 and Peaceful Nuclear Explosions Treaty of 1976, and proceed to negotiating further intermediate limitations on nuclear testing leading to the ultimate objective of the complete cessation of nuclear testing as part of an effective disarmament process."

The negotiations began in November 1987 and so far have concentrated on the additional measures to ensure the verifiability of the threshold test-ban and peaceful nuclear explosions Treaties. As

part of this process, each side has now been able to monitor an underground explosion at the other's nuclear test site. The results of this Joint Verification Experiment are now being analysed and, unless there are unforeseen difficulties, it should be possible to conclude new protocols to both Treaties that will enhance their verifiability. The British Government supports these developments and hopes they will lead to the early ratification of both Treaties.

Further steps to limit testing will then have to be considered. In contemplating what these should be, however, it is important to remember that much has happened in the twenty-five years since a comprehensive test ban was first sought. It has become clear, for example, that there are some important advantages to continued testing. It has helped in the development of at least two important safety measures: one-point safety and insensitive high explosives. The criterion for one-point safety is that if the chemical high explosive in a nuclear warhead is accidentally detonated at any one point on its surfaces (for example by being dropped on a sharp spike or being hit by a projectile), it shall not produce a significant nuclear yield.

Insensitive high explosive is a conventional explosive material for use in nuclear warheads which is less likely to be detonated by accidental impact than were the previously employed explosives. Testing has also enabled smaller-yield weapons to be developed, with the result that there has been a substantial decrease in the overall explosive force of both major Powers' nuclear arsenals. By helping to maintain confidence in the reliability of existing stockpiles, tests may also have reduced pressures to expand them beyond their present levels.

It has also become increasingly recognised since the late 1950s, that limits on testing are no longer the best way to control the arms race. It had been assumed that this was the best approach because, until then, the major leaps forward in nuclear capability had mainly reflected changes in warhead technology, notably the development of thermonuclear weapons in place of atomic weapons. Since then, however, the main technical factor in driving the arms race has been the competition between delivery systems and the means of defending against them, for example between ballistic missiles and ballistic missile defences, between cruise missiles and look-down radars, between bombers and anti-aircraft defences. It is competition of this type which has bred the technologies that dominate present debates—multiple independently targetable re-entry vehicles, directed energy weapons, stealth technology, and so on.

This competition has implications for further limits on testing. As delivery systems have become more sophisticated, the nuclear device has ceased to be simply a package to be transported in a carrier and has had to become an integral part of a weapon system. The required warhead characteristics for a new delivery system are unlikely to be met by an existing and tested device. So a new design will be necessary and there will be a lack of confidence in that design unless it can be tested. The difficulty of limiting tests without first limiting the competition between delivery systems and the means of defending against them has been reflected since the 1960s in a move away from the earlier emphasis on a comprehensive ban toward controls on delivery vehicles, warhead numbers, and defences against them.

Until there has been greater progress in these areas, and until there has been a sustained development in political relations, the security of the West will continue to depend on deterrence based in part on the possession of nuclear weapons. That means that for the foreseeable future there will be a continuing requirement to conduct underground tests so as to ensure that the nuclear weapons which are so crucial to deterrence remain effective and up-to-date. This, in turn, means that, while a comprehensive test ban remains a long-term goal, progress towards it will only be made by the step-by-step approach on which the two major Powers are now embarked. This approach must take account not only of verification problems (and serious verification problems do remain), but also of progress elsewhere in arms control and the attitudes of other States.

The recent proposal for turning the partial test-ban treaty into a comprehensive test-ban treaty by means of an amendment conference runs directly counter to this step-by-step approach. As a depositary Power, the United Kingdom will naturally carry out its international obligations, and, if the necessary number of parties request it, will work closely with its co-depositaries to convene the amendment conference, as required by article II of the treaty. But, as a State party, the United Kingdom does not see any value in the exercise. It seeks to go too far too fast. It cannot succeed. At best it would be an irrelevance. At worst it would be a source of new tensions and differences at a moment when the general mood is to diminish tensions and conciliate differences. It would, in short, be out of character with the times. By contrast, the step-by-step approach is a realistic way of making progress that is far more likely to prove effective.

The partial test-ban treaty marked the start of a fruitful period for East/West relations and for the whole international community. It would

be a sad irony if a proposed amendment to the treaty were to hinder the renewed progress of recent years. It is worth pondering on the conclusion drawn by one of the nuclear era's sharpest intellects and keenest arms controllers, Herbert York. An important passage in his autobiography reads:

"In short, however desirable a CTB may be, it seems not to be a promising option under current world conditions. Moreover, if another President were again to push hard for a CTB, doing so would, as it did in Carter's time, make it much more difficult for him to achieve other, and, I think, much more valuable forms of arms control, such as that involved in the SALT and the START negotiations."

FROM A PARTIAL TO A COMPREHENSIVE TEST BAN

The Objectives of a Test Ban

A ban on all nuclear tests has been one of the main demands by those opposing the proliferation of nuclear weapons. Over time, its arms-control implications have become more specific. Originally, the demands to ban nuclear tests were primarily motivated by the political and moral outrage which the tests and their direct physical consequences fostered. Strontium 90 became a symbol of the nuclear threat to mankind. In such an atmosphere, popular concern for the irreparable, long-term damage to the environment catalysed efforts to ban nuclear tests.

It is questionable whether the partial test-ban treaty (PTBT) would have been achieved in 1963, or any time soon thereafter, had there not been constant pressure from the nuclear weapon free countries and anti-nuclear weapon movements to conclude a ban on nuclear tests. The main demand was for a comprehensive ban on nuclear tests, but the actual treaty fell short of realising this objective. Instead of a comprehensive ban, it prohibited tests in three environments: in the atmosphere, in outer space and under water. The failure to achieve a ban on underground testing left the proponents of a comprehensive ban dissatisfied and assured that the issue would be kept on the international arms-control agenda.

The partial test ban has permitted underground testing to continue unabated. According to SIPRI, from 6 August 1963 to the end of 1987, a total of 1,195 nuclear tests were conducted, of which 1,003 were carried out by either the United States or the Soviet Union. From the dawn of the nuclear age to the conclusion of the PTBT, a total of 547 nuclear tests were conducted. This means, roughly, that testing took place at the rate of about 30 tests per year before the PTBT, and about 52 tests per year after it.

A partial ban has not prevented, and was not intended to prevent, the continued testing of nuclear weapons. It has been said, with justification, that the PTBT was the first global agreement to protect the environment. In effect, the environmental motive behind the PTBT is also stated in its preamble. There “an end to the contamination of man’s environment by radioactive substances” is declared to be a major objective of the treaty.

One may even suggest that the three-power negotiations—among the United States, the United Kingdom and the Soviet Union—to achieve the PTBT were motivated more by a concern for health and environmental consequences than by a determination to cap the arms race. In the United States, many scientists suggested in the late 1950s that a test ban could be an element in a serious arms-control strategy. This view was not shared, as a rule, by the decision-makers who considered a test ban to be a separate measure instead of regarding it as an integral part of an integrated approach to arms control. The verifiability of a test ban was the key criterion for its acceptance as an item on the political agenda.

An interesting aspect of the PTBT is that, in addition to banning nuclear testing in the three environments mentioned above, it prohibits such testing “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”. This provision was obviously intended to prevent the leakage of radioactive substances from underground tests.

The provision has political implications beyond its technical character. First, it reinforces the point that the ban on releasing radioactive material into nature was indeed a major objective of the treaty. In that way the ban was intended to erode the opposition to nuclear weapons which in the late 1950s and the early 1960s was primarily motivated by the detrimental environmental effects of nuclear tests. Secondly, the provision is politically interesting; it permits radioactive contamination within the territorial limits of States conducting tests, but prohibits its spread beyond those limits.

In other words, the PTBT was intended to prevent only the cross-border diffusion of radioactive debris. In that sense, the treaty is explicitly based on the notion of national sovereignty, allowing States to engage in whatever activities they prefer as long as their impact is confined to the State territory and not transmitted to other States. A positive interpretation of this same provision is that the PTBT specifically aimed

to protect not only the other, "innocent" States, but also the global community.

Test Ban and the Nuclear Arms Race

The PTBT was not, of course, confined to environmental problems, but tackled also the disarmament functions of a test ban. The original parties expressed their wish to "put an end to the armaments race and eliminate the incentive to the production and testing of all kinds of weapons, including nuclear weapons". This objective was made dependent, however, on the achievement of "an agreement on general and complete disarmament under strict international control".

This lofty agreement proved to be an empty political phrase rather than a serious political objective. The pressure to conclude a complete test ban was strong, however. To meet this demand the "discontinuance of all test explosions of nuclear weapons for all time" became the ultimate goal. Instead of making a direct commitment to that objective, the parties "determined to continue negotiations to this end".

In the early 1960s a thrust to develop more and better strategic nuclear weapons was under way. Nuclear testing has been traditionally defended on the grounds of maintaining the safety, reliability and effectiveness of nuclear stockpiles. In addition, in the early 1960s the need to test new nuclear weapons as part of the contemporary military thrust was one more reason for the reluctance to accept a complete test ban.

In the PTBT decision, the driving forces of the arms race prevailed over the political commitment to discontinue testing. Another reason for the failure to achieve a comprehensive test ban (CTB) was the reluctance, in particular in the Soviet Union, to permit on-site inspections. Although the national seismic instruments were able to identify nuclear explosions down to a few kiloton range by the early 1960s, a CTB was not attainable.

One reason for this was technical: it was realised that small nuclear explosions could be muffled in large underground caverns to circumvent the seismic verification systems. Another reason was political: there was not sufficient political confidence between the major Powers to reassure them that nuclear testing would not be resumed or clandestinely conducted. The development of technology, specifically satellite surveillance, helped to solve, in part, both of these problems.

From 1962 to 1963, satellite technology advanced dramatically and both major Powers achieved a roughly comparable ability to recover

from space critical information on each other. John Lewis Gaddis has even suggested that there was tacit co-operation between the United States and the Soviet Union in establishing a mutually acceptable reconnaissance satellite regime in about 1963. The stabilisation of the arms race was one of the main objectives of this co-operation. Satellite photographs added new information to that provided by seismic detection of nuclear explosions and thus enhanced political confidence between the major Powers.

Test Ban and Political Symbols

In the collective political mind there is a contradiction between two worlds: a nuclear weapon free world, and a world of nuclear deterrence. Nuclear weapons are conceived in the former, emancipatory perspective as a factor reinforcing international hierarchy and imposing a straitjacket of strategic culture on international relations. A CTB is considered a lever by which the elimination of nuclear weapons can be promoted.

In the latter perspective, nuclear weapons provide for deterrence and, in that way, for international order and stability. Thus, the conflict between proponents and opponents of a CTB is not only about the nuclear arms race *per se*, but also about more fundamental political values and objectives. This means that the debate on a CTB has two different functions: what I shall call the expressive and the instrumental.

In the expressive context, advocacy of a CTB is a part of the search for a non-hierarchical, non-nuclear world order where the political privileges associated with nuclear weapons are removed. In the instrumental context, the protection of the environment is no longer a chief objective, except perhaps for the South Pacific, where nuclear testing continues-to destroy the fragile ecosystem.

Nowadays, advocacy of a CTB is primarily geared to stopping or to slowing down the technological momentum of the nuclear arms race. Over time, a CTB has become an instrument of practical arms-control policies aiming to prevent the further escalation of qualitative arms competition. In that way, it has become linked with other arms-control items such as the non-proliferation of nuclear weapons and the preservation of the traditional meaning of the ABM Treaty.

Field testing is no longer indispensable for the development and deployment of the first generation of fission explosives. It is, however, necessary for the development of a new generation of nuclear weapons. This development work is almost exclusively carried out by the two

major powers. That is why the demands for a CTB do not focus only on the cessation of the nuclear arms race in general, but rather specifically on the most advanced research, development and testing programmes of the United States and the Soviet Union.

In other words, while a CTB would have a certain role in directly slowing down the horizontal proliferation of nuclear weapons to new States, it is primarily targeted at the leading carriers of the technological arms race. That is why its main effect on horizontal proliferation would be indirect: in concluding a CTB, the five nuclear weapon Powers would enhance the credibility and attractiveness of the treaty on the Non-Proliferation of Nuclear Weapons by providing tangible evidence of their willingness to abide by article VI of the treaty.

Is Further Testing Necessary?

The opinions of policy-makers and experts on the necessity of further nuclear testing differ. It is quite obvious that if a State wants to continue a vigorous nuclear weapons programme, it has to conduct tests. A critical question is whether underground tests are needed if the nuclear weapon Powers are prepared to accept the *status quo*, but not to relinquish nuclear weapons altogether. This is apparently the best "offer" which the international community can expect in the present circumstances.

Nuclear tests are conducted for a variety of purposes, including weapons improvements, testing of entirely new weapons, estimation of effects, safety and security tests and stockpile-confidence tests. Although definitive answers are well-nigh impossible to give in this area, a certain consensus appears to be emerging among technical experts. This consensus acknowledges that many alternative methods, based on simulation and laboratory tests, can be developed to reassure the nuclear weapon Powers on the safety and reliability of their nuclear weapon stockpiles. That is why the fear that strategic deterrence and crisis stability would collapse without nuclear testing is unfounded.

On the other hand, there is a consensus that laboratory tests, while obviously useful for the newcomers to the "nuclear club", do not suffice to predict the effects of more advanced nuclear weapons. Thus, test explosions are needed if a nuclear weapon state has determined to upgrade its stockpile by developing and deploying new generations of nuclear weapons or adapting them more effectively to the existing carriers. The refusal to accept a CTB is a sign of the decision to proceed in the development of new nuclear weapons.

Recently, it has been suggested that the rejection of a CTB has largely been motivated by the need to test new military applications of

nuclear technologies. According to this argument, future generations of nuclear weapons necessitate continued testing. X-ray lasers have been used as a concrete example in this context, partly because of their relevance for the development of ballistic missile defences (BMD). From this, it has been concluded that BMD programmes would be a major obstacle to the achievement of a CTB.

This particular conclusion appears to be somewhat far-fetched, however. X-ray lasers are only one of the many technologies to destroy missiles that are examined in the BMD context, and their technical properties may not even be particularly promising. Yet, the point about new generations of nuclear weapons as a major obstacle to a CTB retains its validity.

Strategies of Achieve a CTB

There are several strategies to achieve a CTB. They differ in terms of their substance and political procedures, but they share the commitment to bring about a comprehensive ban on nuclear testing. The most straightforward approach is to stop, once and for all, nuclear testing for military purposes. Parallel resolutions to promote that objective have been adopted over the last number of years in the United Nations General Assembly.

The main difference between these parallel resolutions has been is the specificity of the procedure recommended to the Conference on Disarmament. One type of resolution suggests, in general terms, that the Conference should initiate substantive work on a nuclear-test ban and pay particular attention to the establishment of an international seismic monitoring network. Another type of resolution has stressed a more specific obligation of the Conference to proceed in the matter. It has been requested that the General Assembly should set up a committee to negotiate both the substance of a nuclear-test ban and a system for the verification of compliance with it.

These resolutions have been overwhelmingly supported by the majority of the General Assembly, while they have been voted against by three nuclear weapon Powers and some 20 Member States have abstained from the vote. The real source of disagreement between the majority and the minority of the General Assembly appears to be whether or not to give a negotiating mandate to the committee to be established under the auspices of the Conference on Disarmament. The three Western nuclear weapon powers do not consider such a mandate advisable in the present circumstances.

Since the direct negotiation path has been blocked, a circumvention strategy has been advocated by a number of non-aligned countries, particularly Mexico. Their approach is to request the depositary Governments of the PTBT to convene an amendment conference to consider the changes needed in converting a PTBT into a CTB. According to article II of the PTBT, such a conference has to be convened if a minimum of one third of the parties request it. Article II further states that "any amendment to this treaty must be approved by a majority of votes of all the parties to this treaty, including the votes of all of the Original Parties".

The resolution spelling out this strategy has been approved by the United Nations General Assembly, for example, in 1987, by 128 votes to 3, with 22 abstentions. It is also advocated by Parliamentarians Global Action. As of 1 January 1988 a total of 116 States had become parties to the PTBT. As a consequence, 39 parties would be enough to ask the depositary governments to convene an amendment conference. A simple majority there would not suffice to make the amendment pass, because the three depositaries have a kind of veto enabling them to turn down any proposed change which would step on their toes.

The amendment strategy hardly has any political future. It suggests a mechanical solution to an inherently political problem in which the "haves" do not only confront the "have-nots", but in which the nuclear weapon Powers are divided. A CTB cannot be achieved without the concurrence of these Powers. That is why realism suggests a strategy in which a CTB would be the effective goal which would be approached gradually. To me, gradualism makes perfect sense if an immediate ban on nuclear tests is beyond reach and the ultimate goal of a CTB in the foreseeable future is not given up.

A gradual strategy to obtain a CTB would embody at least two different solutions. A low-threshold test ban (LTTB) would place a considerably lower limit on underground tests than the 150 kt maximum stipulated in the treaty on the Limitation of Underground Nuclear Weapon Tests, known as the threshold test-ban treaty (TTBT). This treaty, not yet ratified, has constrained the testing of new high-yield weapons, but otherwise it has not effectively slowed down the technological arms race. Since 1987, the United States and the Soviet Union have been involved in a Joint Verification Experiment in order to enhance their confidence in the verifiability of the TTBT.

A low-threshold test ban would mean, for example, an upper limit of one kiloton for nuclear tests. According to technical experts, this

would effectively halt the qualitative arms race, except perhaps for new types of sub-kiloton weapons. If an LTTB would further allow about one test per year at a yield of five to fifteen kilotons, the concerns about stockpile reliability could be dispelled. Although the existing verification capabilities remain a political bone of contention, there appears to be adequate expert consensus on the verifiability of an LTTB if tests are conducted on designated test sites and appropriate in-country seismic monitoring is available.

A deficiency of an LTTB is that it still permits the continuation of nuclear testing. That is why, it has been stressed, "any partial agreement should be seen as transitional and contain an unequivocal, internationally binding commitment to achieving a complete prohibition of tests by all states". Such a complete ban could also be achieved gradually, however. The Palme Commission on Disarmament and Security Issues, while stressing its preference for an immediate and complete ban, developed a gradual strategy to implement a CTB.

According to this plan, the participating nuclear weapon states would negotiate an interim agreement to last for a specified period of time. It would include the upper limits on both the yield and number of permissible tests each year. The interim agreement, containing adequate verification mechanisms, would become tighter during the period of its gradual implementation, enforcing "sharp reductions in each signatory's test programme, and building momentum for a total halt to nuclear testing".

The gradual progress from an interim agreement to a complete ban on nuclear testing would be advisable for several reasons. It would embody a formal commitment to the goal of a CTB: yet it would give time to the signatories to adjust their nuclear stockpiles and the reliability of their weapons to new circumstances. The gradual strategy is not a perfect approach, but of all the options I am familiar with it holds the greatest practical promise of moving towards a comprehensive test ban and halting the technological nuclear-arms race.

SEEKING A BETTER APPROACH TO END THE NUCLEAR ARMS RACE: A RETROSPECTIVE ON THE PARTIAL TEST-BAN TREATY

On 25 July 1963, the United States, the Soviet Union and the United Kingdom completed negotiations for a treaty banning nuclear weapon tests in the atmosphere, in outer space and under water. It is commonly referred to as the partial test-ban treaty (PTBT) because it leaves out

the prohibition of underground nuclear tests. However, in its preamble, the three nuclear weapon states said their principal aim was “the speediest possible achievement of an agreement on general and complete disarmament...”, and declared their intention to “achieve the discontinuance of all test explosions of nuclear weapons for all time”.

The partial test-ban treaty immediately became controversial. While the two major Powers congratulated themselves on having taken “a real step... towards settlement of international problems in keeping with the principles of peaceful co-existence”, and regarded the treaty as “for the first time...bringing the forces of nuclear destruction under international control”, much of the opinion in European, Asian and African countries was cool and suspicious. China was indignant; it saw the treaty not only as “a big fraud to fool the people of the world”, aimed at consolidating the nuclear monopoly of two Super-Powers, but also as an attempt by the Soviet leaders to sell out the interests of their allies. It also vehemently charged:

“This treaty completely divorces the cessation of nuclear tests from the total prohibition of nuclear weapons, legalises the continued manufacture, stockpiling and use of nuclear weapons by the three nuclear powers, and runs counter to disarmament.”

Twenty-five years have passed since then. Having diluted much of the emotion of the proponents and opponents of the treaty, the lapse of time perhaps allows both to look at it with a calmer and more detached view.

The partial test-ban treaty was the first substantial product of compromise between the two major Powers in their nuclear arms control efforts. Despite the fact that the driving force to bring a halt to the testing of nuclear explosive devices resulted initially from the concerns of the world’s people over the environmental impact of testing, the two major Powers had always controlled the negotiation process. Since the mid-1950s, however, this negotiation for a comprehensive test ban was dominated by an exchange of proposals aimed at preserving one’s own position while neutralising the other side’s superiority. The 1962 Cuban missile crisis led the two major Powers to fully grasp, for the first time perhaps, the horror of a nuclear exchange.

The two countries saw genuine mutual interest in working to lessen tensions and reduce the risk of nuclear war, even while engaged in relentless military competition. The new vision was clearly revealed in President Kennedy’s commencement speech at the American University on 10 June 1963, in which he emphasised that both the Super-Powers

“must avoid those confrontations which bring an adversary to a choice of either a humiliating retreat or nuclear war”. Something had to be done as a first step to bring the nuclear arms race under control, and the partial test-ban treaty was singled out as a test case. The American conciliatory tone and its reinforced effort to reach agreement was echoed positively by the Soviet Union. In early July 1963, two weeks before the Moscow negotiations began, the Soviet Government made what Beijing called a “180-degree about-face” from its previous opposition to the limited prohibition. Thus the ground was prepared for the first nuclear agreement between the Super-Powers since the Second World War.

The two major nuclear powers, of course, had another common interest in mind. Both of them wanted to ensure the prevention of nuclear proliferation—the spread of nuclear weapons or nuclear weapons technology to States that do not possess them. China was apparently at the top of their list. In early 1958 the Soviet Politburo had already made a secret decision to cease assistance to China in its nuclear effort by “postponing” (in fact, halting) the delivery of a prototype of the atomic bomb. In answering the Chinese criticism of the partial test-ban treaty, the Soviet Government questioned whether non-nuclear weapon states were in a position “to pass judgement” on nuclear matters, and virtually proclaimed that only by keeping the nuclear *status quo* would it be “in the interests of the people all over the world”. It announced:

“The course of history was such that the Soviet Union is the only socialist country manufacturing nuclear weapons. By its entire foreign policy the Soviet Union has demonstrated that its nuclear might reliably protects the interests of the world socialist community and the interests of peoples fighting for their social and national liberation. If there were one or several more socialist countries among the nuclear States this would, of course, make no substantial difference to the defence potential of the socialist camp... But, with each new capitalist State that gets possession of nuclear weapons, the danger of a nuclear war will increase.”

In like manner, the United States candidly emphasised its concern regarding nuclear proliferation as one of the most important factors for speeding up the conclusion of the treaty. The American Secretary of State Dean Rusk said:

“Among the dangers to the United States from continued testing by both sides I would consider the danger of the further spread of nuclear weapons to other countries of perhaps primary importance. Unlimited testing by both the United States and the Soviet Union would substantially

increase the likelihood that more and more nations would seek the dubious, but what some might consider prestigious, distinction of membership in the nuclear club. The risks to the security of the free world from nuclear capabilities coming within the grasp of governments substantially less stable than either the United States or the Soviet Union are grave indeed."

It is interesting to note that when the two major powers really wanted to strike a deal, it could be done very quickly. As one piece of erudite writing described the speed:

"When the negotiations began in mid-July, the goal of a comprehensive treaty was rapidly jettisoned in favour of the limited ban, verification of which would not require on-site inspections or the installation of internal seismic stations. Issues on which there were differences now seem, by today's standards, to have been relatively few and susceptible to extremely rapid resolution. Negotiations were completed in ten days."

From a distance of 25 years, it would be fair to say that although the partial test-ban treaty did not prevent China from becoming a nuclear weapon State (and perhaps also India, which conducted a nuclear test in 1974), the purposes of the two major powers have largely been achieved by the PTBT. The treaty has successfully helped create a bilateral security regime, a framework in which these two powers can "safely" engage in a nuclear arms race. It also helped set the stage for them to shift attention to partial arms limitation negotiations which resulted in a series of agreements to meet their military and political needs in subsequent years. Among these were a bilateral treaty limiting underground nuclear tests to under the equivalent of 150 kilotons of conventional explosive force (the threshold test-ban treaty or TTBT) in 1974, and a complementary bilateral treaty controlling underground nuclear explosions for peaceful purposes (the peaceful nuclear explosions treaty or PNET) in 1976. As for their concern for non-proliferation, the PTBT has become a multilateral treaty, having over a hundred parties. It no doubt contributed to the conclusion of the 1968 non-proliferation treaty (NPT), and paved the way for establishment of a worldwide non-proliferation regime.

Sadly, however, all these accomplishments cannot put the atomic genie back into the bottle, which is universally claimed as the ultimate objective of the test ban effort. The fact is, instead of acting as a brake on the arms race between the two Super-Powers, the PTBT stimulated it. Immediately after the treaty came into force, the primary emphasis in both Washington and Moscow was on implementing programmes for underground testing and for high-level maintenance of weapons

laboratories. Indeed, the pace of tests in both countries was quickened, and a spiralling nuclear arms race still continues today. The number of United States nuclear tests for the period 1945-1986 was 815. Of these, 484, or about 60 per cent, took place after the effective date of the treaty. The Soviet Union conducted 597 tests in the same period, of which 412, or about 70 per cent, took place after mid-1963."

On the basis of these tests, both the Super-Powers not only have made a substantial increase in the number of nuclear weapons, but have also added great sophistication to them. According to one source, at the beginning of 1964, the United States and the Soviet Union had, respectively, 1,297 and 400 strategic nuclear warheads. In early 1987, the number was 13,873 for the United States and 11,044 for the Soviet Union. Altogether, the world now has a stock of roughly 55,000 nuclear weapons (of which the two Super-Powers' nuclear arsenals account for more than 95 per cent). In terms of destructive force, they have a total yield of approximately 16,000 megatons, the equivalent of 3.2 tons of TNT for everyone on earth. Enhanced quality over the years has been even more dramatic and dangerous than the growth in numbers of these weapons. Supported by continual testing, these technical improvements have radically increased the efficiency of nuclear warheads, as well as the variety, speed and accuracy of the means of delivery. This, in turn, has given impetus to changes in the nuclear doctrines of the two major powers towards preparation for fighting a "limited nuclear war", a war they seem to believe they can afford to fight.

Nor does one draw any comfort from the precarious international non-proliferation regime today. Even without help from nuclear weapon states, and under the strictest safeguard from the International Atomic Energy Agency (IAEA), more and more countries have inevitably been acquiring capability to produce these horrible weapons as a result of the spread of commercial nuclear technology and expertise. The reason that many countries prefer to remain as near nuclear weapon states, rather than to go nuclear openly, lies not so much in their respect for the present NPT regime as in other major constraining factors. And the Super-Powers' failure to honour the obligations as written in the preamble of the PTBT has certainly added to the cynicism with which the treaty is viewed by these countries.

So, what are the lessons to be learned from the partial test-ban treaty experience? The whole issue seems to have come back again to the basic question raised by China 25 years ago. If the United States

and the Soviet Union insist on keeping their nuclear weapons as the ultimate deterrent and continue to perfect them in various ways, how can they persuade other lesser nuclear weapon states and all the non-nuclear States that the PTBT is in their interest? This question will become even more pertinent, because the issue of testing may again become prominent in future Soviet-American bilateral talks. Starting in mid-1977, the two major Powers and the United Kingdom tried to negotiate a comprehensive test-ban treaty (CTBT), but failed, and have now shelved the effort because of opposition from the Reagan Administration.

However, with a different American administration in, 1989, this rigid attitude may change. It would not be surprising, therefore, if the USSR, the United Kingdom and the United States were to resume negotiations and work out a draft treaty on further limiting underground tests, or halting all tests for a certain period of time as long as this were not to impede their weapons development. The possible new American flexibility could also help break an impasse at the Geneva Conference on Disarmament that has hitherto prevented the multilateral negotiating body from even setting up an *ad hoc* committee to start its negotiation process for a CTBT, although the two major Powers have never liked their nuclear deals to be interfered with in a multilateral forum. Despite the priority being accorded to the CTBT on its agenda, the Conference on Disarmament could expect to have meaningful negotiations only if based on a draft treaty worked out by the two major nuclear weapon states.

There is also speculation that the two major powers could one day accept a true CTBT; that is, that they could give up all nuclear tests for all time. This could be possible in the long run, as the CTBT has already lost much of its original relevance to halting weapons improvement with the advances in nuclear test techniques and weapons design. At the same time, the American nuclear weapons laboratories probably still believe that nuclear explosive tests might be needed indefinitely to maintain a reliable nuclear deterrent. On the other hand, beginning in 1978, quite a number of American experts expressed the view that their nuclear weapons stockpile could be maintained in an operational form "as long as desired", through measures other than test explosions of weapons. In fact, the United States seems to be working in this direction. A recent United States news report revealed that the United States Congress had just passed a law requiring changes in the management of the weapons programme so as "to insure the reliability of the weapons without explosive testing" in the future.¹

From China's perspective, given the situation as such, any future separate PTBT or comprehensive test-ban treaty would be only an indication of the Super-Powers' having attained a higher level of nuclear sophistication. It would be discriminatory and hypocritical if the two major powers tried to impose it on other nuclear weapon states. This does not suggest that China rejects a test ban as an important arms control measure, or that it favours an "all or nothing" approach. Nuclear weapons have been part of world politics for over 40 years; they affect the life of people all over the world. As far as the test issue is concerned, therefore, it is not only the balance of interests of the United States and the Soviet Union, but also the balance of interests of the two major Powers and other nuclear states, and the balance of interests of nuclear States and non-nuclear States, that should be taken into consideration. Unfortunately, post-war test-ban endeavours have been dominated by the preoccupation with the first of these balances. Thus, while the Super-Powers, through a series of partial arms control measures (including the PTBT), succeeded in providing a safety-valve for themselves, to avoid a head-on nuclear confrontation in their military rivalry, their security was built at the expense of that of all others in the world. As stated in the Final Document of the first special session on disarmament, "mankind is confronted with an unprecedented threat of self-extinction arising from the massive and competitive accumulation of the most destructive weapons ever produced".

Hence, the point worth emphasising is not whether one should or should not have another test-ban treaty. It is, rather, how to ensure that a test ban is put "within the framework of an effective nuclear disarmament process", so that it is really "in the interest of mankind", as was rightly pointed out in the 1978 Final Document. For the achievement of nuclear disarmament, the Document stressed that "all the nuclear weapon states, in particular those among them which possess the most important nuclear arsenals, bear a special responsibility". It also envisaged the following measures:

- "(a) Cessation of the qualitative improvement and development of nuclear weapon systems;
- "(b) Cessation of the production of all types of nuclear weapons and their means of delivery, and of the production of fissionable material for weapons purposes;"
- "(c) A comprehensive, phased programme with agreed time-frames, whenever feasible, for progressive and balanced reduction of stockpiles of nuclear weapons and their means of delivery,

leading to their ultimate and complete elimination at the earliest possible time.”

China embraces these principles. As a third-world country, it developed nuclear weapons under a unique circumstance in history. There is no other country in the world like China, which, for almost three decades after the founding of the People’s Republic, lived in the shadow of a possible military invasion and a nuclear attack by one or both of the major Powers. This nuclear threat forced it to seek a nuclear option in self-defence, and the PTBT in 1963 strengthened, rather than weakened, its determination to break up the nuclear monopoly by a handful of nuclear weapon states whose stance hurt its national pride deeply. China must have also realised when it became a nuclear weapon State that there was a solemn obligation for nuclear disarmament. That is why it has consistently refused to participate in the arms race, and has unilaterally and without condition committed itself not to be the first to use nuclear weapons and not to use nuclear weapons against non-nuclear States or nuclear free zones. Beijing has also expressed its attitude not to encourage or assist nuclear proliferation in any way.

In 1986, China announced that it would no longer conduct atmospheric nuclear tests. The reason China remains critical of the PTBT does not lie in its unwillingness to make the commitments, since it has in fact honoured them in every sense. Rather, it believes strongly that a better approach should be sought to put into practice the principles contained in the Final Document of the first special session on disarmament, which was approved by all the participants of the session. This consideration evidently led China to table a proposal at the second special session of the General Assembly on Disarmament in 1982. It suggested:

“The Soviet Union and the United States should stop testing, improving or manufacturing nuclear weapons and should reduce by 50 per cent all types of their respective nuclear weapons and means of delivery. After that, all other nuclear States should also stop testing, improving or manufacturing nuclear weapons and should reduce their respective nuclear arsenals according to an agreed scale and procedure.”

Beijing believes this proposal is both fair and feasible. Based on the present state of nuclear armaments, it not only takes into consideration the interests of different countries, but also highlights their respective responsibilities, integrating various arms control measures into a viable disarmament process. Both qualitative improvements (including nuclear tests) and quantitative increments of nuclear weapons would be

prevented until the goal of complete prohibition and total destruction of nuclear weapons is achieved. At the same time, China does not refuse to co-operate in the efforts for adopting any partial, substantial arms control measures if the time is right, and if they contribute to slowing down the nuclear arms race and relaxing world tensions. Indeed, Beijing has said that if an *ad hoc* committee on a comprehensive test-ban treaty is set up by the Conference on Disarmament, it is willing to participate.

China is also optimistic about the future. From Beijing's perspective, despite zigzag developments in the world situation, a great deal has changed for the better since the PTBT was negotiated 25 years ago. Confrontation is being replaced by dialogue, military tension and conflicts by a gradual lessening of tensions in almost all the "hot" spots in the world today. In the arms control field, although no agreements that could be expected to end the Super-Powers' arms race are in sight, all the nuclear weapon states seem to manifest good faith to promote arms control and disarmament, and have learned to respect and tolerate different positions, something unimaginable in the 1950s, or 1960s. Moreover, non-nuclear weapon states are no longer idle onlookers to the processes of arms control and disarmament. During recent years, their views have become significant in multilateral disarmament forums and have a growing impact on the policies of the nuclear States, in particular the two major Powers.

So, perhaps it is high time for all the nuclear weapon states to do something together. The first step should be one of exploration, to seek a better understanding of each other. Owing to its fairly neutral position among all nuclear weapon states, the initial move could probably best be taken by Beijing. For example, the head of the Chinese Government could invite heads of the nuclear weapon states Governments to meet. They could then have an extensive exchange of views—on China's proposal or any other proposals—and see whether they could work out, in the context of the state of nuclear armaments in the world, a fair and practical timetable for the cessation of the nuclear arms race and nuclear disarmament, in which a test ban should certainly have its proper place. To be sure, it might be very difficult to reach an agreement. Even in the absence of an agreement, such a meeting would nevertheless be conducive to strengthening mutual trust among nuclear weapon states, which is still so conspicuously lacking today. It is the author's belief that as long as all people and States make sustained and concerted efforts, mankind will manage

eventually to eliminate nuclear weapons, instead of allowing nuclear weapons to eliminate mankind.

NUCLEAR WEAPONS: NON-PROLIFERATION, TECHNOLOGIES AND TEST-BAN TREATIES

The INF treaty has brought in its wake enhanced optimism that major reductions in both tactical and strategic nuclear weapon systems may be realizable. That present stockpiles are far in excess of any reasonable requirement for deterrence is now approaching conventional wisdom. None the less, calls for denuclearisation of Europe and for rendering nuclear weapons “impotent and obsolete” do not assist the mechanics of “build down”. What one must hope is that a security regime is being sought which places *less reliance* upon nuclear weapons, even though there are many advocates (including this writer) of the unique qualities of nuclear deterrence. There is never a risk-free path in issues of international security, and deterrence is still perceived by many as a sustainable doctrine for stability and the prevention of war.

Non-Proliferation

The proliferation of nuclear weapons must be regarded as the end result of Governments assessments of the incentives and disincentives for developing them; at the heart of any decision will be the perception of how national or regional security may be influenced by any implicit or explicit development of nuclear capabilities. That, at least, must underlie the decisions of those countries—in Western Europe, the Middle East, Africa and, perhaps, South America—which have the necessary technical expertise for the development of fission, if not thermonuclear weapons. Any non-proliferation policy for the future must continue to influence the balance of incentives and disincentives at the margin; the requirement continues to be for a system of mutual confidence based on international safeguards. From a narrow technical standpoint, the non-proliferation of nuclear weapons comes under pressure from:

- (a) The diffusion of directly relevant technologies, of which the ones of principal concern are electronics (fusing, arming and firing, for example, applied to implosion of fissile material) and isotope separation and materials processing; laser isotope separation and laser compression studies are of strategic importance and pose major problems of control or diffusion.
- (b) The proliferation of chemical weapons and of (ballistic) missiles. The last five years or so has seen a breakdown in the traditional

inhibitions on the use of chemical weapons; an extension of their use as tactical, battlefield weapons to ones with quasi-strategic value can be anticipated, particularly if no constraints are placed on the proliferation of, say, medium or short-range ballistic missiles. One may anticipate claims for the legitimisation of nuclear capabilities in terms of the only effective response to potential aggressors who have not demonstrated a commitment to the control of chemical weapons. The situation in the Middle East and Gulf can only be regarded with deep concern, given that that theatre is where both the serious erosion of the 1925 Geneva Protocol has taken place and where nuclear non-proliferation may have been breached.

Clearly, constructive diplomacy should continue to have, as its primary objective, the persuasion of “hold out” countries that the acquisition of nuclear weapons would not be in their net interest. Security and confidence-building measures, further agreements on nuclear arms limitation, a comprehensive convention on chemical weapons, refined safeguards, new verification technologies and methods—all of these will have a role in looking towards 1990, especially the 1995 review of the non-proliferation treaty. But the basis of this paper is whether a comprehensive nuclear-test ban, mentioned as an objective in the preamble to the non-proliferation treaty, will be a singularly important and achievable step to demonstrate compliance with article VI of the treaty.

Nuclear Test Ban: A Brief Review

A nuclear-test-ban treaty has been high on the political agenda, bilaterally and multilaterally, for more than thirty years. For historical reasons, nuclear tests are regarded as *the* explicit steps towards establishing nuclear weapons capabilities, while a comprehensive or a low threshold test-ban treaty is held to be a critical index of the reversal of vertical proliferation and, for many, there is a linkage between vertical and horizontal proliferation.

A review of attempts to ban nuclear tests is of major interest in so far as it reflects rather clearly the varying politico-strategic environment or atmosphere that has existed at different times, particularly between the Soviet Union and the United States. In 1958, the United States and the United Kingdom made a major effort to negotiate a comprehensive test-ban treaty with the Soviet Union; the trilateral negotiations finally produced a partial test-ban treaty in 1963 (the underground test regime); and in 1974 the threshold (150 KT) test-ban treaty was negotiated, to

be supplemented in 1976 by the peaceful nuclear explosions treaty. In those 18 years, the strategic nuclear relation between the Soviet Union and the United States was totally transformed.

The conference of experts (1958) found, perhaps remarkably, that a control system would “make it possible to detect and identify nuclear explosions, including low-yield explosions (1.5 KT)”. This technical conclusion was followed quite quickly by a call for negotiations on a comprehensive test ban; a moratorium on tests, lasting until 1961, was agreed, but, by the end of 1958, fundamental differences had emerged on the exercise and practice of a test-ban regime. Later the technical conclusions were brought into doubt, particularly in connection with ambiguities between seismic events and nuclear tests and also as a result of an identification of techniques which were held to be capable of disguising low-yield tests. In other words, the verification issues which have remained to the present centred on discrimination and on difficulties of clandestine testing.

A joint United Kingdom-United States proposal in 1960 introduced a draft threshold treaty in which the threshold was defined in terms of seismic magnitude rather than yield and some 20 on-site inspections were called for, rather than the previous open-ended requirements. The Soviet Union accepted this approach, but, while discussions centred around the length of any moratorium on testing and the number of inspections, any putative agreement was shattered by the U-2 incident, itself a response to verification issues!

A new United States Administration revived the threshold approach, but the Soviet Union recommenced testing in mid-1961—not in conflict with any moratorium—and the United States followed shortly. Six months later, the Eighteen Nation Disarmament Conference prompted negotiations and two alternative approaches—banning all nuclear tests without a threshold on underground tests, and a ban of tests in or above the atmosphere and in the sea—were set down by the United Kingdom and the United States. The subsequent Cuban crisis resulted in the United Nations General Assembly resolutions calling for cessation of nuclear testing and either a comprehensive test ban or a limited ban coupled with a moratorium on underground tests.

The gap between the two sides continued to centre on an inspections regime as well as the automatic seismic stations to be located in the United Kingdom, the United States and the Union of Soviet Socialist Republics. In mid-1963, the partial test-ban treaty was initialled, confining tests to underground. The treaty was considered verifiable by national

technical means, thus overcoming objections to intrusive inspection. It was a decade before the threshold test-ban treaty (150 KT threshold) was (bilaterally) realised. That, with its high threshold, again circumvented all the problems connected with quotas and on-site inspections; but it served to catalyze agreement on the peaceful nuclear explosions treaty (mid-1976). While the United States has not ratified these treaties, they have been honoured on a multilateral basis.

The new United States Administration in 1977 was anxious to move towards a comprehensive test ban but, in a sense, CTB negotiations were caught up in the SALT II ratification process. Even so, an agreement in principle was reached on a multilateral treaty prohibiting all testing of nuclear weapons. The treaty would be verified by national technical means supplemented by an exchange of seismic data; on-site inspections were on request; and in the case of the United Kingdom, the United States and the Union of Soviet Socialist Republics,, national technical means would be supplemented by unmanned seismic stations (the number to be based in the United Kingdom proved problematic). The Soviet approach regarding an unlimited number of challenge inspections was eventually accepted.

There remained the very difficult issue of definition of a “nuclear weapons test explosion” (certain laboratory experiments involving very very low yields together with inertial confinement fusion). But, again it was the broad political environment (including such factors as Afghanistan) and the suspension of the SALT II ratification process which caught up with the test-ban negotiations.

With a new Administration, the United States adopted a totally new position: continued nuclear testing was necessary for “the development, modernisation and certification of warheads, the maintenance of stockpile reliability and the evaluation of nuclear weapons effects”. The United Kingdom adopted a position which similarly reflects that so long as nuclear weapons remain integrated into its defence policies, testing will be necessary “but a comprehensive test ban remains a long-term goal”. The Soviet Union continued its advocacy of a comprehensive test ban and presented the thirty-seventh session of the General Assembly with a paper which was essentially an outline of the draft treaty negotiated in the most recent trilateral discussions. Again CTB began to be enmeshed in even broader issues, ranging from “rendering nuclear weapons impotent and obsolete” to complete denuclearisation by the year 2000. But, there does seem to be a way ahead, even though a balance of compromises will be subject to intense negotiation.

Perceptions of Security

A reasonable working assumption is that a majority of nuclear weapon states will continue to perceive that their security and treaty responsibilities require them to embrace policies and programmes in which less reliance will be placed on the use of nuclear weapons in their defence. Put another way, the stockpiles of the two major Powers are far in excess of any reasonable requirements of deterrence or avoidance of any war. The START process is then one of incremental “build down”, a process which for some observers may be unacceptable, since it cannot reasonably exclude modernisation in the course of build down; it remains obvious that moving towards “building to zero” would require greater mutual confidence than is presently the case.

Given a continuing role for nuclear weapons—albeit more limited and not for an indefinite period—the issues surrounding a future comprehensive or very low threshold test-ban treaty come down to risk assessments, which are inevitably influenced by the broad political atmosphere. Announced risks include the reliability of stockpiled weapons, the question of the development of new weapons, an understanding of nuclear effects, the enhanced safety of nuclear weapons and, to a much lesser extent, issues of peaceful nuclear explosions.

To briefly run through these, and at some risk of oversimplifying arguments:

- (a) *The reliability of stockpiled weapons.* There is factual evidence of a shortfall in performance of certain stockpiled weapons; non-nuclear components of a complex weapon system can obviously be assessed without tests. The most uncertain matter is concerned with the fissile material component of a warhead where non-destructive tests have limited capabilities at detecting subtle structural (phase) changes which impact, rather unpredictably, on performance. It should be mentioned that the minor nuclear weapon states have not been in a position to deplete stockpiles, in any significant way, for the purpose of reliability assessment.
- (b) *The development of new weapons.* It can be recognised that much, if not most, of the improvements in nuclear weapons’ capabilities over the past two decades or more has come, not from improved nuclear technologies, but rather from “conventional” technologies, e.g. delivery accuracy and propulsion systems (mention was made earlier of the need for an understanding of and an agreement to restrict the transfer of these technologies’

subsystems or systems). The design of nuclear warheads is not at a stage where confident predictions can be made as to the “interface” of a warhead with, say, a missile system; but the need to test incremental changes of design is quite different, in political and technical terms, from the need for tests of entirely innovative designs, such as those termed third-generation weapons, deemed to be of interest to certain defence programmes. The international community must be reassured that severe limits are being placed on weapons development which could have profound politico-military significance.

- (c) *Nuclear effects*. There is no doubt that we lack quantitative understanding of the performance of systems (e.g. communications and sensors) in a nuclear environment, but much more can be obtained from laboratory experiments; uncertainty—which is often held to contribute to deterrence—may be equally distributed among the two major nuclear Powers.
- (d) *Safety*. There have been valuable developments in the enhancement of the safety of weapons in the event of accident; such innovations as the introduction of insensitive high explosives could not have been made without nuclear tests.
- (e) *Peaceful nuclear explosions*. The central issue here concerns the judgement as to whether a test ban would preclude the use and development of such explosions, which were held in the past to be of considerable economic importance. Broadly speaking, the present advocacy of the value of peaceful nuclear explosions looks much less convincing than that posed by the United States and the Union of Soviet Socialist Republics in the 1960s and the 1970s.

Verification

This historical review shows the primacy, in political and technical terms, of the verification issue in the CTB debate. How much clandestine testing could take place under a given zero threshold? How significant would such testing be to the development of weapons capabilities? What degree and nature of inspection is needed to supplement national technical means of surveillance? What must be certain is that verification technologies have come a long way over the past decade; and these include improved discrimination techniques. But, of even more import in establishing the precautions for either the ratification of the threshold test ban and peaceful nuclear explosions Treaties or a new very low threshold treaty has been the joint verification experiment on nuclear

testing (the second leg of which took place at Semipalatinsk on 14 September 1988) and the acceptance of the quite intrusive inspection regime established under the terms of the INF treaty. It must be noted that the nature of inspection regimes is at the heart of the remaining problems in the chemical weapons negotiations. The political and technical environment may be judged to be near-optimal for some significant progress on a new test-ban treaty. But there remain differences on some key verification issues which could continue to make a comprehensive test-ban treaty elusive or, more accurately, unratifiable.

The Way Ahead

There would appear to be a number of requirements—if not imperatives—which the nuclear weapon states must meet if they are to be perceived to be supportive of an enhanced non-proliferation regime:

- (a) A reinforcement of the policies of nuclear arms reductions (build down, albeit with some modernisation) with a test-ban treaty which will inhibit real innovation of nuclear weapons, e.g. towards third-generation systems.
- (b) A recognition that technically-advanced non-nuclear weapon states may achieve first generation (fission) systems without tests, but that such capabilities contain uncertainties and second generation systems (fission-fusion devices) require tests for any reasonable confidence to be placed in them.
- (c) China and France will regard a comprehensive test ban as a long-term objective only; they are very unlikely to make an equation of their security interests with a zero-threshold treaty for the short term.
- (d) An understanding that where there remains contention on detection and discrimination, one may have a situation where subtle interpretations of treaty provisions can result in counter-productive relations and a diminishing of confidence measures (the case of the Krasnoyarsk radar and the ABM treaty is but one example).
- (e) An insulation, if possible, from other arms negotiations. The record shows how an imminent test-ban treaty can be caught up by extraneous factors; for example, logically, it would be absurd if difficulties in the verification issues of sea-launched cruise missiles being discussed in START were also connected to a low threshold test-ban treaty.

All of this must mean that moving to a comprehensive test-ban treaty may carry disproportionate risks, at least in the near term. A very low threshold test-ban treaty could contain provisions such as:

- (a) The prohibition and prevention of any underground nuclear weapon test having a yield exceeding ten kilotons.
- (b) The number of underground nuclear weapon tests, by each Party, should not exceed ten per annum.
- (c) This treaty would be valid for five years, during which time negotiations would continue on a comprehensive test-ban regime.
- (d) A verification regime would be based on national technical means and mutual invitations to tests by separate parties; invitations should not be reasonably and normally withheld.

In putting forward this low-threshold treaty, one has had in mind not only the risks which many perceive to be attached to a policy of attempting to go directly to a comprehensive treaty, but also the fact that, on the table as it were, are the negotiations on strategic arms, a follow-on phase to these negotiations, and negotiations on chemical arms and conventional stability. The judgement must be in terms of the extent of compromises to be made on all these points—as one tries to move firmly towards an international security regime based clearly on greater interdependence. However, at least for the near term, the threat of nuclear proliferation and the integration of mechanisms for its prevention must be uppermost in our minds.

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1963 MOSCOW TREATY: ACHIEVEMENTS AND FUTURE PROSPECTS

The Treaty Banning Nuclear Weapons Tests in the Atmosphere, in Outer Space and under Water, signed at Moscow a quarter of a century ago, is rightly considered a major international agreement. The lasting significance of this tremendous achievement of international politics and the power of its positive influence on the difficult and contradictory process of ridding our planet of the nuclear threat are becoming increasingly obvious as the years go by.

The treaty put an end to almost 20 years of undisguised growth of military nuclear might, a period during which virtually our entire planet and nearby space were turned into one continuous nuclear-testing ground. It was at that point that the civilised world first became aware of the overall magnitude and disastrous environmental impact of the uncontrolled energy of the atom, but it was also at that point that the need for common security in the nuclear age revealed itself in all its force and the first step was taken to curb the nuclear threat. For the first time, the world community showed that it was a genuine and powerful political force which no State in the world could afford not to reckon with.

The historical significance of the 1963 Moscow Treaty resides in the fact that it was the first international treaty in which the task of reaching agreement on general and complete disarmament under international control was enunciated as a major goal. Concerning nuclear weapons, the provisions of the Moscow Treaty whereby the original signatories, the Soviet Union, the United States of America and the United Kingdom, announce their desire to “achieve the discontinuance of all test explosions of nuclear weapons for all time” and to continue “negotiations to this end” are of paramount importance. Article 1,

paragraph (1)(b), of the treaty spells out that end as being the conclusion “of a treaty resulting in the permanent banning of all nuclear test explosions, including all such explosions underground”.

As it was open to all States for signature, the Moscow Treaty confirmed their right to work for the strengthening of its regime and for a ‘ complete ban on nuclear testing. The Moscow Treaty entered into force for an unlimited period and any State may accede to it at any time. By the beginning of 1989, 116 countries had signed or acceded to the Treaty, over 100 of them having already done so by the time the treaty entered into force on 10 October 1963. France and China, which conducted their first atmospheric nuclear tests in 1960 and 1964 respectively, were noticeably absent from this large group of countries and to this day have not become parties to the Moscow Treaty. However, the treaty acquired such international authority that, in the end, these two nuclear Powers announced unilaterally that they were discontinuing their atmospheric nuclear tests. France made the announcement in 1975 and China in 1985, having conducted its last such explosion in 1980.

The provisions of the 1963 Moscow Treaty define the norms of civilised conduct for nuclear Powers. By prohibiting nuclear explosions in the atmosphere, in outer space and under water and thereby sharply restricting the ways in which radioactive contamination could penetrate the environment, the Moscow Treaty made a major contribution to shaping the future concept of universal ecological security.

The treaty’s contribution to preventing the global spread of nuclear weapons was no less significant. Here, of course, its function was not to create actual technical obstacles to the possession of nuclear weapons: what was far more important was that the conclusion of the Moscow Treaty and its entire thrust emphasised the universal value of voluntarily renouncing nuclear-Power status. There is an inherently close relationship between the 1963 Moscow Treaty and the treaty on the Non-Proliferation of Nuclear Weapons concluded five years later, and also other treaties and conventions limiting or prohibiting the emplacement of nuclear weapons in space, on the sea-bed and the ocean floor, and on the Moon and other celestial bodies, and military or other activities detrimental to the natural environment.

The countries signatories to the treaty on the Non-Proliferation of Nuclear Weapons (over 130 States, including three nuclear powers, are now parties to the treaty) undertook “to pursue negotiations in good faith on effective measures relating to cessation of the nuclear

arms race” and, in particular, “to seek to achieve the discontinuance of all test explosions of nuclear weapons for all time and to continue negotiations to this end”. The right of non-nuclear States to participate in the negotiations on a nuclear test ban, a right set forth in the 1963 Moscow treaty, was thus, confirmed and reinforced by the treaty on the Non-Proliferation of Nuclear Weapons. The discontinuance of nuclear weapon tests has been discussed in countless multilateral forums, particularly at sessions of the United Nations General Assembly, where dozens of resolutions have been adopted on this question. Since the early 1980s, in the Committee on Disarmament (now called the Conference on Disarmament), major efforts have been made to conclude a treaty on the complete prohibition of nuclear weapon tests. The non-nuclear States are playing a very active role in this process. Time and again it has been seen that no other nuclear-arms-limitation measure has received such resolute, persistent and steadfast support from the non-nuclear States as the complete cessation of nuclear testing. The reasons for this are obvious: a ban on all test explosions of nuclear weapons would make a substantial contribution to nuclear disarmament and to strengthening the international regime for the non-proliferation of nuclear weapons. Conversely, the continuation of such tests contributes to the nuclear-arms race and undermines the non-proliferation regime. With their scientific and technological development, many countries of the world are nearing the “nuclear threshold”. At all three Review Conferences of the Parties to the treaty on the Non-Proliferation of Nuclear Weapons it was pointed out that the nuclear Powers were not fulfilling their obligations. In other words, if the reliability of the non-proliferation regime is to be increased, progress must be made in gradually (doing away with nuclear weapons. In this sense, the cessation of nuclear testing would be an important practical obstacle to both the vertical and the horizontal proliferation of nuclear weapons.

Despite the unrelenting efforts of an overwhelming proportion of the world community to secure a comprehensive nuclear-test ban, this goal has yet to be achieved. Clearly, the initiative now rests with the nuclear Powers, above all the two most powerful ones, the Soviet Union and the United States.

Ever since the signing of the 1963 Moscow Treaty, the Soviet Union has done everything possible, in keeping with its obligations, to conclude a treaty on the discontinuance of all test explosions of nuclear weapons for all time. In the 25 years that have elapsed, the Soviet Union’s basic position on this question—essentially, the early achievement of the

major goal of a general and complete ban on nuclear testing—has not changed. The set of measures taken by the Soviet Union in this field has not been limited only to bilateral or trilateral talks with the other two nuclear Powers that are parties to the Moscow treaty. It consistently advocates increased parallel efforts, within the framework of the Conference on Disarmament, to draw up a multilateral treaty on the complete and general cessation of nuclear weapon tests. In June 1987, the Soviet Union and other socialist countries submitted the basic provisions of such a treaty to the Conference on Disarmament for consideration. This new document brings together all the positive results of the tremendous joint efforts made to solve the problem of the cessation of nuclear testing. It contains proposals for a wide-ranging system of verification, including compulsory on-site inspections. Since it is fully aware of the magnitude of the nuclear threat that hangs over the world, the Soviet Union advocates abandoning the myth that nuclear weapons are the “guarantor” of peace, when they are in fact capable of reducing all life on this planet to ashes. The Soviet Union sees great danger in the link between continued nuclear testing and the undermining of the nuclear non-proliferation regime. Speaking on 8 June 1988 at the third special session of the General Assembly devoted to disarmament, the Minister for Foreign Affairs of the Soviet Union, Eduard A. Shevardnadze, warned the international community that “without limiting and banning nuclear tests it is difficult, and even impossible, to prevent the global spread of nuclear weapons”

In its efforts to show clearly that it is perfectly feasible to find a practical solution to the problem of nuclear testing, the Soviet Union went so far as to take the serious unilateral step of declaring an 18-month moratorium on all nuclear explosions. The Soviet moratorium bore out one of the main conclusions that can be drawn from the 1963 Moscow Treaty, namely that political will is a decisive factor in halting nuclear tests,, And on that occasion, it was technical obstacles related to verification that apparently proved insurmountable, and powerful opposition gave rise to military-technological and military-political counter-arguments. In signing the Moscow Treaty, the Soviet Union did not back up its political decision with military and technological efforts, as the United States did. As subsequent nuclear-test statistics have shown, until 1964 the Soviet Union conducted only two underground nuclear tests as against 129 by the United States in the same period. It should be noted that the United States also conducted more atmospheric tests than the Soviet Union. In the decade after the Moscow Treaty was signed, the United States also carried out far more

underground nuclear explosions than the Soviet Union. The importance of the 1963 Moscow Treaty as a nuclear-arms-limitation agreement is often minimised on the grounds that it did not remove all possibilities for the qualitative improvement of nuclear weapons or halt the arms race. At the same time, there can be no denying that the Moscow Treaty was the first international agreement to limit the process of creating nuclear weapons. The treaty set up certain obstacles to the development, testing and adoption of new types of powerful nuclear warheads and made it impossible to carry out nuclear explosions in conditions closely approximating combat conditions. Because of it, little study could be made of some destructive aspects of nuclear explosions, for instance the electromagnetic pulse. Most of all, the development of a strategy of nuclear war and estimates of the effectiveness of nuclear first-strike capabilities and of the viability of nuclear retaliation increasingly entered the realm of hypothesis and became increasingly vague and correspondingly less realistic. Suffice it to say that, as became clear in the 1980s, United States nuclear strategy took no account of the phenomenon of “nuclear winter”, the catastrophic global changes in the Earth’s climate that would result from nuclear strikes on cities, circumstances that would make any powerful nuclear bombardment suicidal for the side inflicting it.

The next step on the road to limiting the possibilities of developing nuclear weapons was the Soviet-United States “threshold” treaties: the 1974 treaty on the Limitation of Underground Nuclear Weapon Tests, which limited the yield to 150 kilotons, and the 1976 treaty on Underground Nuclear Explosions for Peaceful Purposes. Although these Treaties have yet to be ratified, they are in fact being observed. Other nuclear Powers also refrain from conducting underground nuclear tests with a yield of over 150 kilotons.

Critics of the 1963 Moscow Treaty and of nuclear arms limitation agreements also lose sight of the fact that, when the treaty was being drafted, a real chance of banning all nuclear tests existed that could at that time have brought the whole system of military nuclear preparations to the brink of total collapse. How viable such a ban would have been and how long it would have lasted are other questions. An important lesson of the Moscow Treaty was that it showed just how much resistance can be expected from those who advocate maintaining and building up military nuclear strength and also that it demonstrated the vast array of methods which they have used to block progress in those and many other negotiations on a comprehensive nuclear-test ban.

First of all, there is the emphasis on the problem of verification: the negative attitude to a comprehensive nuclear-test ban is justified by references to the difficulty of verifying that such tests have not been carried out. When the 1963 Moscow Treaty was being drafted, it was not possible to find mutually acceptable, speedy solutions to the problem of verification of underground nuclear tests, although very broad, effective verification measures, including international on-site inspections, were discussed. In the early 1980s, again on the pretext of the difficulties of effective verification, the United States broke off trilateral negotiations on a comprehensive nuclear-test ban just as they were nearing a successful outcome.

The Soviet Union takes the view that the problem of verification is not an obstacle to the banning of nuclear tests. It favours the use of all national and international means of verification, with on-site inspection. The international exchange of seismic data should play an important role in the system of international verification. The USSR has advocated development of a system involving the routine global exchange of seismic data with the use of a satellite link. The USSR and other socialist countries have also advocated the setting up by the Conference on Disarmament of a special group of scientific experts to submit recommendations on the structure and functions of a system of verification for any possible agreement not to conduct nuclear weapon tests, as well as the establishment of an international system of global radiation safety monitoring involving the use of space communication links. The Soviet Union has announced its support for the appeal of the General Assembly, in its resolution 41/59 N, on the notification of nuclear tests. At the present time, the USSR is the only nuclear power that provides the United Nations with data on its nuclear tests.

A second and almost insurmountable obstacle to a complete nuclear-test ban lies in the politico-military and strategic doctrines which guide the United States and its nuclear allies in their military buildup. In declaring its adherence to the final objective of banning nuclear tests, the United States makes clear its readiness to agree to this only if it has no need to depend on a nuclear deterrent in order to ensure international security and stability and if agreement is reached on broad, major and verifiable reductions in existing nuclear arsenals, substantially improved means of verification, expanded confidence-building measures and a more stable balance in conventional forces.

For its part, the Soviet Union views a nuclear-test ban as an independent measure of disarmament capable of curbing the nuclear-

arms race and accelerating the elimination of nuclear weapons. A reason for such a difference in approach to the problem of nuclear tests is that the USSR does not confine its security to the need to build up and further improve its nuclear stockpile. It takes the view that the nuclear-arms race, of which nuclear tests are a part, does not reinforce but rather undermines both national and global security.

At the same time, the Soviet Union, being an advocate of a radical solution to this problem—the immediate and comprehensive banning of nuclear tests—has never adopted the extreme position of either a full ban or nothing. The 1963 Moscow Treaty provides a clear example of that. It was thanks to the Soviet Government's compromise proposal that the talks were able to progress and an agreement was signed banning nuclear tests in three environments. Nearly a quarter of a century later at the Reykjavik summit, the Soviet side, taking into account the true circumstances and readiness of the United States, made a proposal to begin full-scale Soviet-United States talks on nuclear tests, covering also the intermediate stages on the way to a full nuclear-test ban. As a result, although differences remain between the two sides in their approach to nuclear tests, real opportunities have arisen for practical interaction between the USSR and the United States in this field.

In the full-scale talks beginning in November 1987, both sides were to agree, as a first step, to effective verification measures, which would make it possible to ratify the 1974 Soviet-United States Treaty on the Limitation of Underground Nuclear Weapon Tests and the 1976 Treaty on Underground Nuclear Explosions for Peaceful Purposes; they were also to agree to further intermediate limitations of nuclear tests. One achievement of the talks was the agreement reached on the conduct at each other's nuclear-test sites of a joint verification experiment (JVE). The conceptual basis for the Soviet-United States dialogue was the recognition that its goal was the complete halting of nuclear tests and the step-by-step attainment of this goal as a part of an effective disarmament process.

On 17 August 1988 a nuclear explosion was carried out at the Nevada test site in the United States, and another on 14 September of the same year at the Semipalatinsk test site in the USSR; the yield in each case was monitored on site by specialists of the other side, who had brought their own equipment and hydrodynamic apparatus for measuring the yield of the underground blast. At the same time, the yield of the blasts was measured by each side with the help of its

national seismic station network. The nuclear tests were preceded by large-scale preparations at each test site by representative groups of specialists of the other side and the exchange of scientific and technical data and information. The JVE was formally linked to the ratification of the 1974 and 1976 treaties, but its significance goes far beyond the stated goals. Taken as a whole, the JVE is unprecedented in the entire history of the Soviet-United States dialogue on limiting nuclear tests and curbing the arms race. It is quite possible that in future the JVE will be seen as one of the greatest landmarks in the history of disarmament.

In the third round of talks between the USSR and the United States on nuclear tests, which ended in December 1988, agreement was reached in general on a draft verification protocol to the Treaty on Underground Nuclear Explosions for Peaceful Purposes and progress was made in elaborating a similar protocol to the Treaty on the Limitation of Underground Nuclear Weapon Tests.

The new agreed positions on verification represent an important step in reinforcing mutual trust in this sphere, which has been traditionally characterised by a high degree of mutual apprehension. Furthermore, the experience gained through businesslike collaboration in solving technical, organisational and other questions of verification raised the talks on further nuclear-test limitations and forms of verification to a new level.

In 1988, the General Assembly again declared itself in favour of halting all nuclear weapon tests and of making an immediate start, within the framework of the Conference on Disarmament, on multilateral talks with the aim of elaborating a nuclear-test-ban treaty. However, since the Conference on Disarmament has still not succeeded in agreeing on a start to the multilateral talks, the numerous proposals and initiatives on concrete aspects of halting nuclear tests put forward by various States remain unimplemented.

In this connection, great interest and expectations are aroused by the proposals of a group of countries for utilisation of the mechanism embodied in the Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and under Water for the submission and consideration of amendments. The provisions of this Treaty make it incumbent upon the depositary Governments, if requested to do so by one third or more of the parties thereto, to convene a conference of all the parties in order to consider an amendment. At present, over 20 countries support the proposal of Indonesia, Mexico, Peru, Sri Lanka,

Venezuela and Yugoslavia for an amendment to the 1963 Moscow Treaty which would oblige all the parties to prohibit, to prevent, and not to carry out any nuclear weapon-test explosion, or any other nuclear explosion, under-ground or in any other environment not mentioned in the treaty. These countries addressed to the depositaries of the 1963 Moscow Treaty letters enclosing the text of the amendment and requesting that they make arrangements to convene the conference as soon as one third of the parties (39 countries) had so requested. The Soviet Union supports in principle the idea of broadening the sphere of operation of the Moscow Treaty and including in it a ban on underground nuclear tests.

Discussion of this amendment on a multilateral level will in all probability not exhaust the opportunities for improving this unique international agreement. The time has long been ripe for France and China, as well as other States, to accede to the 1963 Moscow Treaty.

In conclusion, it should be stressed that the significance of the 1963 Moscow Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and under Water should be assessed on the basis of its major, substantive achievements and its contribution to the consolidation of international security, rather than on the basis of any supposedly missed opportunities. The treaty, notwithstanding its—by twentieth-century standards—considerable age, is still far from becoming a relic of the nuclear era. It continues to hold great potential which could and should be used in the fight against the nuclear threat.

THE JOINT VERIFICATION EXPERIMENT: A UNIQUE APPROACH TO DEVELOPING VERIFICATION AGREEMENTS

In November 1987 the United States and USSR began full-scale step-by-step negotiations on nuclear testing. The first step was to work out an agreement on effective verification measures for use in establishing compliance with the 1974 threshold test-ban treaty (TTBT) and the 1976 peaceful nuclear explosions treaty (PNET). The TTBT prohibits the underground testing of nuclear weapons whose explosive yield would exceed 150 kilotons. The PNET is a complementary treaty which limits individual underground explosions for peaceful purposes to the same maximum yield of 150 kilotons. Although these treaties have been signed, they have not been ratified by the two Governments. The sides agreed to make no changes in the treaties but to develop and agree on new protocols to each of them in order to provide effective verification measures that would make it possible for the treaties to be ratified.

The sides agreed to plan and conclude a joint verification experiment (JVE) during the Washington summit meeting in December 1987. The Secretary of State of the United States and the Foreign Minister of the USSR issued a joint statement on 9 December 1987 which established the general guidelines for conducting two nuclear explosions, one in each country, with personnel and equipment of the other side present to measure the yield of each explosion.

The text of that joint statement reads:

“In accordance with the joint statement on the problems relating to nuclear testing, adopted in Washington on September 17, 1987, the US and the USSR are proceeding to design a joint verification experiment. This experiment would be conducted as soon as possible at the test sites of each other (respectively in Semipalatinsk and Nevada) for the purpose of the elaboration of improved verification measures for the 1974 Threshold Test Ban Treaty and the 1976 Peaceful Nuclear Explosions Treaty. These verification measures will, to the extent appropriate, be used in further nuclear test limitation agreements which may subsequently be reached.

“For the purpose of the joint verification experiment, each side will provide the other side with an opportunity to measure the yield of one or two explosions at each side’s test site with yields not less than 100 kilotons and approaching 150 kilotons.

“For the purpose of the joint verification experiment, each side will have the opportunity, on the basis of complete reciprocity, to measure the yields of the explosions for verification purposes, using: teleseismic methods; and, at the other side’s test site, hydro-dynamic yield measurement methods in a satellite hole. As a yield standard, the experiment will include yield measurement by means of a hydrodynamic method in the emplacement hole.

“The joint verification experiment will not be designed to produce statistically significant results, but will be conducted in such a way as to address all other concerns identified by either side regarding methods proposed by the other side for verification of the 1974 Threshold Test Ban Treaty and the 1976 Peaceful Nuclear Explosions Treaty. The information is intended to resolve these concerns by providing a joint experiment and by demonstrating their practicability and non-intrusiveness. The experiment will thus provide the basis for agreeing on those verification measures which could be used by either side to verify compliance by the other side with the provisions of the 1974 and 1976 Treaties. The understanding has been reached that in the future each side will be entitled to apply any or all of these agreed verification measures.”

The agreement to hold these two tests as part of a joint experiment incorporated ideas contributed by both sides in the discussions that had gone on for several years leading up to the agreement. In his statements to the United Nations General Assembly in September 1984 and 1986 President Reagan had invited experts from the Soviet Union to witness a United States test, bringing their own instruments to make on-site measurement of the yield. At the time when the agreement to undertake the experiment was being finalised, the Soviet Union had made the conduct of the JVE a necessary step before it would agree on new protocol language. Both sides agreed that the conditions for the experiment should be conducted with full reciprocity, each side having the opportunity to make on-site yield measurements.

The use of on-site measurements in these experiments broke new ground for verification measures for nuclear weapon tests. Each country had the opportunity to use its own hydrodynamic measurement techniques to measure the yield of the explosions. The Protocol to the peaceful nuclear explosions Treaty originally negotiated defined a verification regime in which on-site hydrodynamic measurements of the yield would be made using a cable, to be inserted in the emplacement hole at the same time as the explosive was lowered. The shock wave produced at the time of the explosion would crush the cable at a rate proportional to the yield, with electronic instruments attached to the cable to record the rate of shortening of the cable. It was recognised by both sides that such on-site hydrodynamic measurements would provide a very accurate measurement of the yield and would be less subject to conceivable evasion than methods which were conducted only at great distances. However, the protocol to the threshold test ban Treaty originally negotiated did not include provision for such hydrodynamic measures or any other on-site measurements of yield. Only yield measurements through national technical means (NTM) were to be used, primarily measurements of the seismic waves which propagate through the outer portion of the earth's crust and are recorded by seismometers located far from the explosion site.

The argument that these NTM measurements of yield had not proved to be sufficiently effective is based on the fact that, although each side agreed to comply with the provisions of the Treaty since it was signed and has claimed to have always done so, there have been charges by each side that the threshold limit of 150 kilotons had been exceeded by the other side on numerous occasions in the intervening years. Concern for maintaining the military secrecy with which nuclear weapon tests were conducted, and fears concerning the possibility of compromise if

personnel and equipment of the other side were present on the highly restricted test sites, had been the dominant reasons for utilising only NTM means for verification of weapon tests.

Thus the agreement in the joint verification experiment to undertake on-site hydrodynamic measurements on a trial basis for tests to be conducted on the nuclear weapon test sites of both sides represented a major step forward. One new concept which had been introduced only recently for reducing the security concerns while still allowing on-site yield measurements was the utilisation of a "satellite hole", a separate small-diameter hole, adjacent to the emplacement hole, in which the hydrodynamic cable could be placed. The "satellite hole" concept for hydrodynamic yield measurements thus allows the placement of verification instruments at times other than that of the emplacement of the nuclear weapon to be tested, while also maintaining complete separation between the verification cables and instruments and the host's diagnostic cables (normally placed in the emplacement hole) and their associated instrumentation.

The principal factors to be independently evaluated by each side in each test in the JVE thus became the effectiveness, practicability, and the non-intrusiveness of the methods proposed by either side in order that the JVE might provide a basis for subsequent agreement on verification measures which could be incorporated into new protocols to the treaties.

In January 1988, the sides exchanged visits by 20 nuclear testing experts of either side to the other's nuclear testing site to enable them to familiarize themselves with the way in which each side conducts tests and thereby to provide a basis for the design and conduct of the JVE. The visits to these most sensitive and restricted areas in each country were in themselves unprecedented. The visits and the subsequent on-site preparations for the JVE were in fact the first official exchange of verification personnel for on-site inspections and work in support of arms control agreement by the United States and USSR, preceding the INF site inspections by several months.

Following the site visits, the sides began the negotiation in Geneva of a detailed agreement on the conduct of the joint verification experiment. The agreement was completed and signed on 31 May 1988 during the summit meeting in Moscow. This agreement contains considerable technical detail of the conditions for preparing the experimental measurements, for bringing personnel and equipment into the territory of the other side and for carrying out inspections of

the equipment. The agreement included provisions for exchanging the yield measurement data recorded by each side during the preparation and conduct of the explosion, as well as an explanation, prior to each event, of the analysis methods each side would use to process the hydrodynamic yield measurements. The exchange of formulas and data in the JVE, along with simultaneous measurements by each side, provided a side-by-side comparison of the kiloton yield scale which each side uses for its nuclear tests.

The JVE agreement also includes a data exchange, prior to and after the experiment, which could be used in teleseismic measurements of yield. Data exchanged included the geological and geophysical data, geographic co-ordinates, depth of burial, time and actual underground yield for five historic explosions each had conducted in the period from 1978 to 1988, along with the 10 seismic records of these two sets of explosions as recorded at five designated seismic stations at teleseismic distances from each test site. This exchange satisfied (and in fact exceeded) the data exchange which had been called for in the original protocol to the 1974 TTBT.

Since both sides had assigned high priority to the preparation and conduct of the JVE, certain preparations were begun in April 1988 in accordance with a diplomatic agreement reached in Geneva. Under this agreement the United States, which had developed the satellite hole technology, agreed to bring its own drilling rig and personnel to the Soviet Union to drill a satellite hole parallel to, and 11 metres away from, the emplacement hole which had already been drilled by the Soviet side. To expedite the schedule for drilling this hole, which had already been identified as the critical item governing the schedule for the two tests, the United States agreed to fly the massive equipment on seven C5 cargo aircraft from the Nevada test site to the Soviet Union. To expedite the delivery of this equipment to their test site, the Soviet side authorised the C5 flights to land at the Semipalatinsk airport in Kazakhstan, more than 2000 miles within the Soviet border. This unprecedented operation was timed to coincide with the arrival of Soviet personnel at the Nevada test site to witness the drilling and coring of a satellite hole at that location. This massive airlift and the use of the equipment by the visiting personnel occurred exactly on schedule on both continents.

A remarkable accomplishment, in retrospect, is the fact that the detailed schedule which was negotiated and published in the JVE agreement was met exactly by both sides for both experiments. This

achievement attests not only to the skill of the highly trained personnel which each side assigned but also to the high priority that each government assigned to the successful completion of the JVE. The test at the Nevada test site in the United States was conducted on 17 August 1988; and the test at the Semipalatinsk test site in the USSR was conducted on 14 September 1988. Both of the tests had yields between 100 and 150 kilotons, as specified in the agreement, and the data exchanges called for in the agreement all took place, with full collection of that data being reported by each side.

Discussions of the results of the verification measurements by technical experts of the two sides have been taking place in Geneva as a part of the testing negotiations with a view to developing new protocols. Although these negotiations are still in progress, the real measure of the success of the JVE and the negotiations themselves can in fact be judged only by the extent to which they can lead to ratified protocols. It is not too soon to assess the value of the JVE approach.

I believe both sides already declare that the experience gained in the JVE has been unique and invaluable in developing treaty protocol agreements which will be lasting. It has always been proven that "experience is the best teacher", but perhaps the value of practical experience for arms negotiations is best stated by an analogy which Nietzsche drew:

"When one has finished building one's house, one suddenly realises that in the process one has learned something that one really needed to know in the worst way—before one began."

In the task assigned to us of building lasting agreements for verifying these treaties, we have that great opportunity, now that we have finished the first "house", that is, the joint verification experiment, and with that practice behind us, we are now moving forward to draft the final text of the protocols with considerable knowledge and experience gained to sustain the building of the final agreements.

Although in negotiating any high-level agreement between Governments considerable care is taken not to make mistakes that could later be regretted, the fact that the first agreement, the JVE, was a trial run allowed both sides to minimize the likelihood of any inadvertent errors. Being able to try verification techniques and also to evaluate treaty-type texts on an experimental basis in advance of finalising treaty protocols has allowed both sides to make progress on a faster pace. The preliminary negotiations have clearly gone faster than could otherwise have been possible if the negotiators had been

trying to finalize language that must stand for significant periods of time in the future.

The trial verification process, embodied in the JVE, also attacked what is otherwise a critical problem of written agreements—ambiguity of the language. Besides the added difficulty of negotiating a text in two languages, there will always be many opportunities for the two sides to develop different interpretations of the meanings of the written words. Unfortunately, no matter how great an effort is made to try to prevent misunderstandings between two parties over the meaning of treaty or protocol language, problems inevitably arise. More often than not, differences in interpretation become apparent only when the agreement is put into force and those charged with carrying out the agreement discover the differences and must try to deal with the problems created by the ambiguity.

By trying out negotiated language in the field before finalising the text of the protocol, we are certain to produce a better agreement than could possibly have been achieved without that experience. Indeed, we did uncover legitimate differences in interpretations as we conducted activities within the JVE and we were able to re-address some of the issues during the course of the experiments, and to identify others as “lessons learned”, to be dealt with in the protocol negotiations.

Finally, the fact that such problems arose and that they were always solved, with understanding by both parties of the problem and of the solution, has contributed greatly to mutual confidence in continued progress in the negotiations. We shall doubtless continue to build on the successes achieved in the JVE in order to achieve the successful completion and ratification of our work on these two treaties, the PNET and the TTBT.

THE TREATY OF 1963: RETROSPECTIVE AND PERSPECTIVE

From 1945 to 1963, the United States of America, the Soviet Union and the United Kingdom conducted most of their nuclear weapons tests in the atmosphere. Beginning in 1960, France, too, conducted atomic weapons tests there, as did China beginning in 1964.

The American tests conducted at Bikini on 1 March 1954 were a source of great concern to the world because of the radioactive fall-out which they produced over the Marshall Islands, Japan and the Japanese vessel *Fukurya Maru*. Not until much later, however, would the real effects of atmospheric testing be learned. They were played down, even occasionally ignored, by those conducting the tests. In the United

States this was clear from numerous reports, disclosures and investigations. In Australia, recent investigations offer striking evidence of such activities. The Government of the United Kingdom had been authorised to conduct tests there from 1952 to 1963. In 1985, an Australian commission of inquiry discovered that neither the authorities nor the public in Australia had been informed of the nature of the tests, much less of the risks they entailed.

The problem of testing was at first viewed by the three nuclear Powers as a particular element which was an integral part of general and complete disarmament. On 2 April 1954, however, Prime Minister Jawaharlal Nehru of India called for a halting of tests, and on 24 April 1955, the Bandung Conference did likewise. In 1956, the Soviet Union discussed the halting of tests outside the context of general and complete disarmament measures and India reaffirmed Nehru's statement of 1954 on 12 July 1956.

In 1958, negotiations on this subject began among the three nuclear Powers. The three countries suspended their tests from 3 November 1958 to 31 August 1961; this *de facto* moratorium was the result of individual decisions that involved no unilateral or multilateral commitments. It was reported recently that low-yield tests were carried out by the United States during this period. On 1 September 1961, the USSR resumed testing after making an announcement to that effect two days earlier. The limitations of the moratorium thus became apparent, although it helped pave the way for negotiations. The signing of the partial test-ban Treaty (PTBT) on 5 August 1963 was further facilitated by a new moratorium on testing announced by President Kennedy of the United States on 10 June of that year. The moratorium initiated by the Soviet Union from 6 August 1985 to 27 February 1987, a period during which 23 American tests were conducted, was also unilateral and conditional and had no real effect on the attitude of the other nuclear Powers.

In any event, the three nuclear Powers negotiated among themselves and, from 1961, in the Geneva Conference of the Eighteen-Nation Committee on Disarmament (which in fact comprised only 17 States, as France did not participate). These negotiations were discussed in the General Assembly each year.

Negotiations on a comprehensive test ban reached an impasse over the problem of inspection. The Western Powers wanted a minimum of seven on-site inspections a year in each country that possessed nuclear weapons. On 12 December 1962, Khrushchev proposed having two or

three inspections. Prime Minister Harold Macmillan of the United Kingdom considered this sufficient, but the United States insisted on seven, and American (and possibly the Soviet) armed forces were actually opposed to a comprehensive ban. In the end, political considerations outweighed the technical problems involved.

The solution chosen, therefore, was a partial ban. Before this evolved, however, the Antarctic Treaty, which was signed on 1 December 1959 and entered into force on 23 June 1961, specifically prohibited weapons tests of any kind in that part of the world and provided for a system of inspections.

The partial test-ban treaty, which was signed on 5 August 1963 and came into force on 10 October of that year, prohibited tests in three environments: the atmosphere; outer space; and under water, including territorial waters or high seas. Underground explosions were permitted. However, under the preamble and article I, the parties undertook to endeavour to conclude a treaty prohibiting all tests, including underground tests, and they stated their determination to continue negotiations to that end. This is an important provision and one that was relatively uncommon in treaties at that time.

Underground explosions were prohibited, however, if they caused "radioactive debris to be present outside the territorial limits of the State under whose jurisdiction or control such explosion is conducted". Some leakage, particularly of gaseous particles, occurred subsequently, but it did not appear to have been detrimental to health, safety or the environment. Prior to 1981, the United States and the Soviet Union discussed this matter with each other without any problem. Subsequently, however, they accused each other of violating this provision of the Treaty.

With the exception of underground tests, the Treaty prohibits "any nuclear weapon test explosion, or any other nuclear explosion". These last four words cover explosions conducted for peaceful purposes, which are not technologically distinguishable from weapons tests. When India, a party to the Treaty, conducted an underground nuclear explosion in May 1974, it was not actually violating the terms of the PTBT, but when it claimed that the explosion was peaceful and had nothing to do with nuclear armament, it was infringing the spirit of the Treaty, which has in fact been subjected to other, similar breaches since then.

The Treaty contains no provision for monitoring. The three nuclear parties believed, although this was not stated in the text, that they obviously possessed sufficient monitoring technology to ensure that

the obligations they had assumed would be met. The disparities between parties in this area were obvious, and this fact was the subject of complaints. The situation is less true today. At the same time there were those who, like Edward Teller, suggested that tests might be conducted deep in outer space, in which case they could not be detected. This fear, which derived from an obsession with worst-case scenarios, proved to be groundless.

It had been hoped that the partial test-ban Treaty would help to halt the arms race. On this point, however, there was room for doubt from the moment the Treaty was ratified. American sources, which are far more plentiful than any other, indicated that the United States wished to maintain nuclear superiority. In exchange for ratification, President Kennedy had to promise American military circles and Congress, on 10 September 1963, that underground nuclear tests would continue unabated and that the nuclear weapons development programme would be vigorously carried out.

The Treaty was viewed as an instrument that would prevent the proliferation of nuclear weapons (largely by making testing more difficult), and as a means to help “put the genie back in the bottle”. The issue of non-proliferation was one of the points of discord between the Soviet Union and China during the period from July to September 1963, with China criticising the Treaty for confirming the nuclear monopoly of the three Powers, a monopoly which had already been broken. What role did the Treaty play in this area? It is difficult to say. Neither France nor China became parties to it. Only one other State, India, which was in fact a party to the Treaty, is known to have conducted a nuclear explosion (under ground). Among States that have the capacity to acquire their own nuclear weapons, Israel (a party to the Treaty), which has not engaged in testing in so far as anyone knows, may well possess such weapons, while South Africa (a party to the Treaty) and Pakistan (not a party) may have them. In any case, the Treaty on the Non-Proliferation of Nuclear Weapons recalls, in its preamble, the determination of the Parties to the partial test-ban Treaty to seek to achieve the discontinuance of all tests. The NPT review conferences have affirmed that the achievement of this objective is an essential element of a non-proliferation regime.

Actually, the PTBT has done much to improve public health throughout the world in that the radioactive fall-out generated by atmospheric tests has been largely eliminated. Public opinion has exerted much pressure in this regard, even if it has not been forcefully expressed

in certain countries. The reality of this pressure and its effectiveness have been acknowledged by Harold Macmillan of the United Kingdom, the Swiss Government, the Soviet Government and the American authorities.

The Cuban missile crisis also made people aware of several dangers: nuclear war, radioactive pollution, and the proliferation of nuclear weapons. The interests of the opposing parties, it was believed, converged on all those issues. Detente hovered on the horizon and it looked as if a new attitude was taking hold—but unfortunately, this was only temporary. Nevertheless, the Treaty continued to have considerable political significance.

Unlike those who, in the name of scientific progress, constantly advocated further weapons research, others (such as Harold Brown, United States Secretary of Defense under President Jimmy Carter) seemed to admit—at least in speeches—in connection with the PTBT that “it is far more important to prevent a war than to acquire knowledge”.

The partial test-ban Treaty did not deal with arms reduction or limitation; it was supposed to hamper the acquisition of specific knowledge of a certain nature and the further development of nuclear weapons. According to the incrementalist philosophy of arms control, it was hoped that these obstacles would be strengthened in the course of time and that the PTBT would pave the way for a whole series of new multilateral agreements of ever greater significance. These hopes were not fulfilled.

As of 31 December 1987, 116 States had become parties to the PTBT. Non-parties included China, France and Pakistan (which became a Party in 1988). From 16 July 1945 to 31 December 1987, a total of 1,742 tests were conducted, of which 547 took place before the PTBT came into existence. During this time, there were 425 atmospheric tests (217 American, 183 Soviet, 21 British and 4 French). After 5 August 1963, only France and China continued atmospheric testing: 41 French tests were conducted up to 1974 (the last year in which France conducted such tests) and 22 Chinese tests up to 1980; only on 21 March 1986 did the Prime Minister of China officially renounce atmospheric testing (although China stopped conducting them in 1980).

Since 1963, the international community has repeatedly—and unsuccessfully—called for the conclusion of a comprehensive test-ban treaty. The United States and the Soviet Union signed two treaties setting 150 kilotons as the maximum yield for tests: the 1974 Treaty on

nuclear weapons and the 1976 Treaty on nuclear devices used for peaceful purposes. Neither of those treaties was ratified, but the two Governments decided to abide by them. The United States Government alleged that the agreements had been violated, a claim that has been contested by scholars and institutions. In any event, it would seem to be more difficult to determine whether the yield of a test fell within a few kilotons of the 150-kiloton limit than to verify a comprehensive test-ban treaty.

In 1977, the three depositaries of the partial test-ban Treaty began negotiations on a comprehensive test ban. In their most recent report, dated 1980, they reported substantial progress, including progress on verification issues, and declared that a total ban was important and desirable as a measure in itself, independent of other disarmament measures. That, however, was the last that was heard of those negotiations. As of 1982, the United States Government maintained that a complete ban was a long-term objective that could be achieved only at a time "when we no longer need to depend on nuclear deterrence to ensure international security and stability; and when we have achieved broad, deep and verifiable arms reductions, a more stable balance in East-West conventional forces, expanded confidence-building measures, and substantially improved verification capabilities". And so we have returned to the pre-1958 situation: the banning of tests is subordinate to other disarmament measures. Yet, since 1980, no objective new element has appeared to justify such a change. It is political thinking that has changed, a fact which illustrates how important such thinking is:

The arguments used to buttress the foregoing explanations by the United States would not appear to be decisive. Nor are they free from contradictions. Kenneth Adelman, then Director of the United States Arms Control and Disarmament Agency, stated on 31 August 1985 that a complete ban would not make the world safer, noting that it would not reduce by even one the number of nuclear weapons in the world. On the other hand, it is maintained that further testing is necessary in order to modernize weapons: 75 per cent to 80 per cent of all current American testing is used to develop weapons systems. Thus a complete ban would slow down the qualitative arms race. It is also claimed that tests are needed to monitor the reliability of existing stockpiles of weapons. However, only 3 per cent of all tests are conducted for this purpose, so that the argument based on this aim would seem to be somewhat exaggerated. Moreover, a lesser degree of reliability would introduce a margin of uncertainty, encourage caution and diminish the temptation to strike first.

Another argument is that a test ban would reduce confidence in American nuclear weapons and encourage America's allies and even neutral countries to develop their own, thus harming the cause of non-proliferation. This argument runs counter to the policy of United States President Kennedy, the NPT and the attitude of most non-nuclear weapon States that want a ban on all tests.

Would an end to testing prompt researchers to leave the nuclear sector? Ambassador Robert van Schaik, the Permanent Representative of the Netherlands to the United Nations Office at Geneva, puts it well: "The underlying assumption of any of the arms control approaches currently considered is that parties are prepared to pay the price of constraint, if 'price' is the proper word."

Can a verification system ensure that a total ban will be honoured by the States concerned? No system of this kind is or can be 100 per cent reliable, but the risks must be weighed. A suitable international seismic and atmospheric monitoring network combined with other measures such as on-site inspections, which the USSR is now prepared to accept, could be highly effective. The system would, however, have to be genuinely international.

At any rate, on 17 September 1987, the United States and the USSR reached agreement on the agenda for overall and stage-by-stage negotiations on nuclear tests. They began by drawing up protocols on more thorough verification of the 1974 and 1976 bilateral treaties. Tests were arranged, in August 1988 in Nevada, and the following month in Semipalatinsk, and experts from each side took part in calibrating them. It was arranged that, after agreement on the protocols, negotiations on a gradual step-by-step restriction of tests would continue. Previously, the USSR had favoured a total ban and stated that verification should relate to disarmament, not to the continuation of the arms race. On verification, the USSR has changed its position. It still adheres to the objective of a comprehensive ban, but describes itself as realistic and willing to look for mutually acceptable solutions. It would also be necessary, as the representative of Sweden pointed out, to reach agreements to limit the yield and numbers of nuclear tests to a level of real military significance.

The international community has long put the nuclear Powers, especially the two Super-Powers, under pressure to halt their testing. A new means of doing this has recently been recommended by the United Nations General Assembly. By virtue of article II of the partial test-ban Treaty, any party may propose amendments to the Treaty. If

one third or more of the parties so request, the proposed amendment must be submitted to a conference of all the parties to be convened by the depositaries. A simple majority of the parties, including the three depositaries—the Soviet Union, the United Kingdom and the United States—is required for the amendment to be approved and take effect. On 30 November 1987, the General Assembly recommended “that the non-nuclear weapon states parties to the Treaty...submit an amendment proposal to the depositary Governments with a view to convening a conference at the earliest possible date to consider amendments to the Treaty that would convert it into a comprehensive nuclear-test-ban treaty”. Only three States voted against the resolution: France, the United Kingdom and the United States. An amendment has already been proposed by Indonesia, Mexico, Peru, Sri Lanka and Yugoslavia in the Conference on Disarmament. On 7 December 1988 the General Assembly welcomed the submission to the depositary Governments of the Treaty of an amendment proposal for consideration at a conference of the parties to the Treaty convened for that purpose in accordance with article II of the Treaty. For the time being, two of the three depositaries would reject the conversion of the partial test-ban Treaty into an agreement banning tests altogether. But convening a conference of all the parties might be a means of mobilising public opinion and bringing new, powerful pressure to bear on those who resist the move. Some well-respected Americans are of this view.

France began testing in 1960 in the Sahara, and continued there until 1966, when it transferred its activities to Mururoa in the South Pacific. The countries of Africa and the United Nations General Assembly were indignant. France is the only country to have conducted tests in Africa, and this was what gave rise to the General Assembly resolutions calling for the implementation of the Declaration on the Denuclearisation of Africa. The French tests in 1960 were invoked by the Soviet Union to justify its resumption of testing in 1961. In the debate on ratification of the partial test-ban Treaty, the United States left open the option of withdrawing from the Treaty if France continued its atmospheric tests.

General De Gaulle’s attitude towards the partial test-ban Treaty was the same as China’s. He saw it as a sign of the Super-Powers’ desire for hegemony. He said that France would conduct tests in the atmosphere as long as it considered that necessary and as long as the Super-Powers failed to agree on nuclear disarmament. Yet the French had conducted four underground tests before the test-ban Treaty was signed.

The protests grew. In France itself, Robert Kastler (Nobel laureate), Jules Moch (former Minister) and Francis Perrin (former High Commissioner for Atomic Energy) called for cessation of the tests. In 1973, Australia and New Zealand called on the International Court of Justice to declare the atmospheric tests illegal. The Court, in an order dated 22 June 1973, decided as a protective measure that France should refrain from any further testing that would create radioactive fall-out over the territory of the two applicants. No ruling was made on the substance of the case. In its decision of 20 December 1974, the Court confined itself to taking note of the French announcement that, once the 1974 series was over, France would conduct no more atmospheric tests. Without doubt, this change was due to greater sensitivity to public opinion on the part of the new President, Giscard d'Estaing. Nevertheless, the Gaullist myth of an independent *force de frappe* has prevented France from acceding to the partial test-ban Treaty. Recently, Lionel Jospin, the Minister of National Education, wondered if France should not take a less negative attitude towards disarmament: "Why not tidy up the wording a little and sign the 1963 Moscow Treaty banning atmospheric tests or the nuclear non-proliferation Treaty?" Jospin also expressed the view that the political costs and military benefits of the tests needed to be re-evaluated, and that the costs should not be borne if the benefits were not conclusive. In 1977, Francois Mitterrand, then leader of the opposition, promised that, once in power, he would unilaterally halt testing.

Tests did nevertheless continue under ground. Faced with further protests from the countries of the Pacific region, the Government of France invited and received a tripartite scientific mission from Australia, New Zealand and Papua New Guinea, which visited Mururoa and Papeete in October and November 1983. According to the mission, atmospheric radiation over the test sites was below the internationally established threshold. It added that it had not been able to make all the necessary observations and inquiries about long-term effects, and expressed concern over the resulting cracks and the possibility of leaks and long-term contamination. French authorities citing this report tend to gloss over this critical section, while the Australians stress it. New accusations have recently been levelled. The French authorities admit that the physical structure of Mururoa has suffered but deny there is any danger; they plan to transfer the test site to the island of Fagataufa.

France refuses to take part in negotiations on the subject of an end to testing. It does not consider it to be a priority issue nor does it

foresee any possibility of a comprehensive ban until the nuclear disarmament process is complete. On the other hand, it asserts that a restoration of the conventional balance will not induce it to abandon its nuclear weapons; therefore, one may wonder when nuclear disarmament will ever come about. In any event, "it is not axiomatic that the reduction of weapons leads to the reduction of tests". President Mitterrand, in an interview on Swedish television on 11 May 1984, said that if the other nuclear Powers abandoned testing "we would be ready to consider the matter".

Official policy, however, remains that explained by the representatives of France to the United Nations and the Conference on Disarmament. In his statement to the General Assembly at the third special session devoted to disarmament, on 2 June 1988, the Minister for Foreign Affairs, Roland Dumas, said that talks between the two Super-Powers about limitations on tests could not be considered binding on France; a reduction or ban "can only be the consequence, not the cause, of a cut in arms"; and the arithmetic used by the Super-Powers if they did make cuts (in weapons and tests) could not apply to France, "whose nuclear arsenal is already at its strictly essential level".

Dumas' speech contained a new departure. He announced that France had "decided to make a yearly statement of the number of tests performed in the preceding 12 months". It should be recalled that in 1986 and 1987 the General Assembly had called on States to report each of their tests within the following week, providing specific data on them as requested in the resolutions concerned. The commitment by France is evidently much more restricted, the more so since New Zealand announces French tests when they take place (early in November 1988, Agence France Presse reported authorised sources as stating that a number of tests had not been included in the New Zealand tally).

The earlier arguments against continuing testing also apply to the position of France. But the French position presents some special features: it is very rigid, more so even than that of the United States, because at the moment Paris rejects any bilateral or multilateral negotiation. On the other hand, negotiating would appear to be a fundamental duty of a State. The conditions laid down for agreeing to negotiations and ending tests are extremely strict and restrictive. Is the intention to stop testing after nuclear disarmament, when there are no longer any nuclear weapons to test? The adherence to nuclear weapons may be the explanation for the attack carried out on 10 July 1985—and covered up by the highest French authorities—against the harmless vessel *Rainbow*

Warrior, belonging to the ecological organisation Greenpeace, which had been sent to object to the Mururoa tests.

The continuation of the tests is sometimes defended on the grounds that they are rare as compared with American or Soviet tests. But, up to 31 December 1987 there had been 151 French tests, 31 British tests and 30 Chinese tests. This line of argument would open the way to a process of levelling upwards and unbridled competition.

France is the only country that conducts its tests outside its continental territory. The States of the South Pacific have long been indignant at this. They maintain that if the tests have no adverse effects, France can conduct them at home. They affirm that their region is a political and social reality which they are entitled to manage as they see fit. This is why they decided, through the Rarotonga Treaty of 6 August 1985, to establish a nuclear free zone in the South Pacific. France does not intend to adhere to the Protocols to that Treaty. Some French officials point to the British tests in Australia and the American tests in the Pacific. Over the past 25 years, however, circumstances, viewpoints and international relations have altered considerably.

Officially, France preaches deterrence of the strong by the weak. But deterrence has its own logic, and many internal contradictions; the highest political authority in the State says that France will not forswear any type of weapons which the other Powers have, and this inevitably affects its attitude towards testing. That attitude is hardly favourable to a strengthening of the non-proliferation regime, which is nevertheless defended in principle.

In conclusion, I wish to stress the importance and necessity of a comprehensive test ban. This is a priority objective which public opinion, the great majority of Governments, international, governmental and non-governmental organisations, and a great many scientists and experts throughout the world have been pursuing for 25 years. No arms control measure has been so thoroughly discussed and examined bilaterally, trilaterally and multilaterally. The commitments made 25 years ago must finally be honoured; this is the price of public confidence in Governments and international co-operation. The preservation and strengthening of the non-proliferation regime also depend on it. Of course, a comprehensive ban is not a disarmament measure. It can, however, be accomplished more easily than disarmament; an all-or-nothing philosophy is pernicious in any domain of international life. A comprehensive ban would at least make it possible for the nuclear arms race to be slowed, the likelihood of a first strike to be reduced,

and negotiations to be conducted free of the constant pressure of technological innovations. Absolutely water-tight verification is not possible, but, with the necessary will and investment, a satisfactory system can be set up.

Albert Einstein complained of a lack of foresight. The constructive and creative imagination we need is the kind which sees advantages rather than risks in a major step towards disarmament and peace.

**“THE DISCONTINUANCE OF ALL TEST EXPLOSIONS OF
NUCLEAR WEAPONS FOR ALL TIME...”**

When the United States, the United Kingdom and the Soviet Union signed the Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and under Water (the partial test-ban treaty—PTBT) more than 25 years ago, they proclaimed 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”. They also sought “to achieve the discontinuance of all test explosions of nuclear weapons for all time, determined to continue negotiations to this end”. Progress towards these overall goals has been limited despite international pressure exerted through the United Nations and the Conference on Disarmament and other multilateral forums such as the Movement of Non-Aligned Countries.

The initial round of formal negotiations, involving the United Kingdom, the United States and the Soviet Union on what was perceived as eventually leading to a comprehensive test ban, began in Geneva in October 1958, but the articulate international call for such a ban has been traced as far back as early 1954 and the gravely adverse effects of the atmospheric nuclear tests called “Operation Castle”, carried out by the United States. In July 1954 the United Nations Disarmament Commission had before it a proposal by India for “a standstill agreement in respect of these actual explosions, even if arrangements about the discontinuance of production and stockpiling must await more substantial agreements among those principally concerned”.

The proposal itself was not examined in depth in the Disarmament Commission but helped focus attention on the question of such tests in a manner that helped its subsequent consideration in the United Nations General Assembly and other forums. At the sub-committee

meetings in London of the Disarmament Commission in 1957, the United States and the Soviet Union took up the question of a test ban. The following year, a Conference of Experts met in Geneva with the participation of Canada, Czechoslovakia, France, Poland, Romania, the Soviet Union, the United Kingdom and the United States. This was eventually followed by an agreement on the part of the Soviet Union, the United Kingdom and the United States for the commencement of formal negotiations on a test ban. What is important to note about the early period leading up to the formal negotiations of 1958 was that a comprehensive test ban came to be entangled in East-West rivalries and strategic considerations. The subject was also considered very much a part of the broader issue of general arms control, within which context it developed an urgent political priority.

The Conference on the Discontinuance of Nuclear Weapon Testing, which opened on 31 October 1958, involved issues well beyond the question of a test ban *per se*. Mutual suspicions between the United States and the Soviet Union on political and strategic matters continued. The question of monitoring, or verification, became perhaps the central issue. The detection of nuclear explosions through remote means was not considered foolproof and on-site inspections involved far too many sensitive issues to be found acceptable. An informal moratorium on testing which had come into effect in 1958 came under pressure, and in September 1961—coinciding, incidentally, with the first summit meeting of non-aligned countries in Belgrade—the Soviet Union conducted a test explosion. The United States soon resumed its own tests as well.

These series of formal negotiations on the test ban ended in January 1962. The issue had also come to involve the international scientific community, the press and the general public, raising questions not only of security and disarmament, but also far-reaching concerns about radioactive contamination of the environment. The Conference of the Eighteen-Nation Committee on Disarmament (ENDC) was established by the United States, the United Kingdom and the Soviet Union in Geneva as a new multilateral forum and 1962 brought negotiations of a sort on a test ban to this forum, widening the debate on the subject to include the participation of members of the recently formed Movement of Non-Aligned Countries as well, thus giving an important multilateral dimension to what had been essentially a tripartite affair.

Krishna Menon of India, who was at that time Chairman of ENDC, spoke thus of test explosions on 20 March 1962:

“... many years ago at the United Nations...we were asked to agree to a limited number of explosions. We then said that was more or less licensing vice....We have no doubt that these explosions are a threat to humanity in more ways than one....These explosions...have effects upon humanity, biologically, genetically, psychologically and otherwise. They constitute a grave danger. What is more, they create a kind of lack of respect for certain nations.”

Interventions of non-aligned States were a significant element in the consideration of a comprehensive test ban and caused the Super-Powers to become more aware of the concerns of non-aligned States, which is, of course, less than taking account of them. The ENDC subcommittee on the question of a treaty on the discontinuance of nuclear weapon tests, established in March 1962, consisted of the Soviet Union, the United Kingdom and the United States. East-West differences slowed the pace of its work and a group of eight non-aligned and neutral States active in ENDC presented a joint memorandum, which the nuclear Powers were urged to consider “so as to save humanity from the evil of further nuclear tests”. Such initiatives continued through the Conference of the Committee on Disarmament (CCD) and the Committee on Disarmament, the precursors of the Conference on Disarmament.

The Cuban missile crisis of October 1962 is considered to be the immediate catalyst for the negotiations that took place in Moscow in July 1963. At that time the Soviet Union showed a preference for a test ban which excluded underground tests, the partial approach favoured by the United States in earlier negotiations. The fact that in the period immediately preceding the negotiations both Super-Powers had conducted extensive tests in the atmosphere and were reconciled to confining future tests to those conducted underground made the negotiations that much less complicated. Agreement on a system of verification was not a major issue in that each Power felt confident that it had its own independent means of verifying compliance with the Treaty by the other in the domains concerned. The PTBT was accordingly signed on 5 August 1963 and entered into force on 10 October 1963.

The Treaty sought, as the preamble indicates, the discontinuance of all test explosions of nuclear weapons for all time, and held out the promise that the original parties would continue negotiations to that end. The PTBT is therefore seen to have been conceived as a stage, or an interim measure, in the process leading to a comprehensive test ban—the ban itself being placed in the overall context of the principal

aim of general and complete disarmament. The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) adopted five years later was linked to the PTBT. The NPT, in its preamble, recalls the determination expressed by the parties to the 1963 PTBT to seek to achieve the discontinuance of all test explosions of nuclear weapons for all time and to continue negotiations to that end. It is therefore a comma, not a full stop, as it were, that is placed after the PTBT. The three original parties have committed themselves to an eventual comprehensive test ban. Parties to the PTBT undertake, in essence, to prohibit, to prevent, and not to carry out any nuclear weapon-test explosion or any other nuclear explosion in the atmosphere; beyond its limits, including outer space; or under water, including territorial waters and high seas; or in any other environment where such an explosion would cause radioactive debris to be present outside the territorial limits of the State conducting the explosion. In addition to the three original parties—the Soviet Union, the United Kingdom and the United States—there are about 120 parties to the PTBT.

Although France and China, the other two nuclear powers, are not parties to the Treaty, they appear to have tacitly accepted its main injunction inasmuch as they have not conducted atmospheric testing. This could perhaps be credited at least partly to the wide international acceptance of the Treaty and its “moral” influence. In 1986, China made a formal announcement that it would not conduct atmospheric test explosions in the future. By the same token, a comprehensive test ban to which the United States, the United Kingdom and the Soviet Union commit themselves would make it politically more difficult, *vis-a-vis* international opinion, for the other nuclear weapon states to continue underground testing as well. The curbs on atmospheric testing by Treaty States and others have served to reduce radioactive contamination of the atmosphere and this has been claimed as a major contribution to the preservation of the environment.

Underground testing is not entirely unrestricted. The 1974 Treaty on the Limitation of Underground Nuclear Weapon Tests (the threshold test-ban Treaty—TTBT), whatever its limitations, was the result of United Nations agitation for a ban on underground testing as well. The Treaty, however, only stipulates a ceiling on the explosive yield of the permitted explosion—150 kilotons, a generously high yield threshold, considering that it is about 10 times more than that of the Hiroshima detonation. The benefits of this Treaty are limited in that today the efficacy of nuclear weapons systems is judged more by the range and the accuracy of the missiles than by the explosive yield of the warheads. The 1976

Treaty on Underground Nuclear Explosions for Peaceful Purposes (PNET) was equally lacking in significant impact, failing as it did to decisively halt the extraction of weapon-oriented data of nuclear explosions said to be for peaceful application. Neither Treaty has been ratified.

Considerable latitude is therefore permitted with respect to underground testing. Continued testing has been defended by its supporters as essential for a variety of purposes. Test explosions are considered necessary to refine weapon designs and provide sophistication in them—a task which, it is claimed, cannot be reliably accomplished through computer or other simulation. However, expert opinions differ on this point. Furthermore, test explosions are said to be necessary to ensure the continued reliability and efficiency of weapons that have been stockpiled or deployed. However, surveillance programmes through means other than nuclear detonations (chemical, electronic, mechanical etc.) are held by experts to be a suitably effective means of ensuring the reliability of stockpiled weapons. The argument that test explosions are required to ensure the safety of nuclear weapons is not without the counter-argument that malfunctioning of nuclear weapons and accidental detonation can indeed be prevented without recourse to test explosions.

The strongest and perhaps most fervently proclaimed line of argument for continued testing is “the need” to improve the lethality and accuracy of nuclear weapon systems or their qualitative sophistication. The need to maintain a technological “edge” over rival systems is an argument used to continue testing and one which is intrinsically bound to doctrines of deterrence. The non-aligned countries have believed in the cogent argument that a halt to testing would be the best means of preventing a qualitative escalation of nuclear weaponry and thwarting the arms race.

The cessation of testing would also strengthen the NPT regime and would be an incentive for possible new adherents. Many States that are not parties to the NPT (including Argentina, Brazil, India, Pakistan and Israel) are parties to the PTBT. Conversely, continued failure to effect a comprehensive test ban would have a negative impact on the future of the NPT at its Review Conference in 1990. Paul Warnke, former United States arms negotiator, described a comprehensive test ban as “perhaps the single most effective step that could be taken by the nuclear Powers” for promoting and strengthening an international non-proliferation regime.

Certain perceptions and a wariness on the part of some nuclear weapon states have frustrated multilateral efforts in the Conference on Disarmament (CD) and in its predecessors (ENDC and CCD) to commence negotiations leading to a comprehensive test ban. Despite considerable progress in the trilateral negotiations, they did not continue beyond 1980, and the Conference on Disarmament heard the last report on them in that year. Draft treaties submitted respectively by the USSR in 1977 and 1983, by Sweden in 1983 and by the socialist States in 1987 have been before these bodies, but with the exception of a brief discussion of verification issues within the framework of a subsidiary body of the Conference on Disarmament established in 1982 and 1983 no negotiations on them have taken place.

An *Ad Hoc* Group of Scientific Experts to Consider International Co-operative Measures to Detect and Identify Seismic Events established within the framework of the Conference on Disarmament and its predecessor bodies has however been examining issues relating to verification of compliance with a comprehensive test-ban treaty. This has not led to any agreement to commence negotiations on a treaty. No subsidiary body has been established in the Conference on Disarmament to deal with its agenda item relating to the nuclear test ban, despite efforts to that effect made since 1983. At the opening meeting of the Conference on Disarmament in 1984. Mexico's Ambassador Alfonso Garcia Robles asserted that the highest priority should be given to the negotiation of a treaty banning all nuclear weapon test explosions, and recalled that in 1972 the Secretary-General had stated that all the technical and scientific aspects of the problem had been studied so thoroughly that all that was needed to reach final agreement was a political decision.

The desire to compensate for this stagnation or lack of progress on the negotiations in the Conference on Disarmament has prompted the parallel exploration of other means to achieve some action. Without any desire to usurp the mandate and functions of the Conference on Disarmament or to undermine its central role in multilateral negotiations, attention has been focused for some years on the possibility of utilising the provisions of article II of the PTBT, which set forth procedures for the consideration and eventual adoption of amendments to the Treaty by a conference of its parties. The advocates of the amendment conference concept see it as a possible stimulus to the stalled work on the test ban in the Conference on Disarmament rather than as a diversion or disruption of it. As a parallel, the Paris Conference on chemical weapons

held in January 1989 may be cited as having supported rather than supplanted the current work in the Conference on Disarmament on the question.

Following consultations among some non-aligned and neutral States in 1985 in the context of the Third Review Conference of the NPT and its aftermath, the United Nations General Assembly recommended, in its resolution 40/80 B, that States parties to the partial test-ban Treaty carry out urgent consultations as to the advisability and most appropriate method of taking advantage of the provisions for the conversion of the Treaty into a comprehensive nuclear-test-ban treaty. The United Kingdom and the United States voted against this resolution, while the Soviet Union voted affirmatively. The following year, the General Assembly, in its resolution 41/46 B, called more specifically for practical steps leading to the convening of a conference to consider amendments to the Treaty. In 1987 the Assembly, in resolution 42/26 B, moved the initiative further.

On 5 August 1988, the twenty-fifth anniversary of the PTBT, in accordance with article II of the Treaty and General Assembly resolution 42/26 B, the delegations of Indonesia, Mexico, Peru, Sri Lanka and Yugoslavia to the Conference on Disarmament formally submitted identical letters to the foreign ministers of the three depositary States at the Conference on Disarmament, enclosing an amendment proposal for consideration at a conference of the Treaty parties convened for that purpose. Venezuela joined in the request. Significantly, foreign ministers of non-aligned countries meeting in Nicosia, Cyprus, in September 1988 enthusiastically welcomed and supported the submission of the request.

Acknowledging the action by the six non-aligned and neutral States, the United Nations General Assembly, in its resolution 43/63 B, welcomed the submission to the depositary Governments of the amendment proposal. The amendment proposal consists of the addition to the Treaty of a further article and two protocols. The first protocol would have the States parties to the Treaty undertake, in addition to their undertaking in article I, to prohibit, to prevent and not to carry out any nuclear weapon test explosion or any other nuclear explosion underground or in any other environment not described in article I of the Treaty. The precise provisions of protocol II have not been indicated and are to be submitted for consideration and agreement at the amendment conference. They are to deal with all questions of verification, including those related to:

- International co-operation for seismic and atmospheric data acquisition and analysis;
- Installation of special seismic detection networks on the territory of the nuclear weapon states parties to the Treaty;
- Non-interference with national technical means of verification and non-use of concealment measures which impede verification by national technical means;
- On-site inspections; and
- A permanent consultative mechanism to consider questions of compliance and ambiguous situations.

Once one third of the parties to the treaty—that is, 39—support the request for the amendment conference, the depositary Governments are obliged to convene a conference to take up the proposed amendments. In keeping with their responsibilities, the depositary Governments have already circulated the proposals for amendment to all treaty parties. When the conference is convened, amendments presented to it will be adopted if they are supported by a majority of the parties—that is, at least 58. The three depositary Governments must also be among this number.

The United States reaction to the amendment proposal was indicated by its representative to the Conference on Disarmament, Ambassador Max Friedersdorf, who explained that a comprehensive test ban remains a long-term objective and one that must be viewed in the context of a time when there would no longer be a need to depend on nuclear deterrence to ensure international security and stability, and when there would be broad, deep and verifiable arms reductions, a more stable balance in East-West conventional forces, expanded confidence-building measures, and substantially improved verification capabilities. He explained that the United States and the Soviet Union were engaged in a process that could lead to real progress in the area of nuclear testing through step-by-step negotiations, which were under way. Ambassador Youri Nazarkin, the representative of the Soviet Union to the Conference on Disarmament, has clarified that his country, while favouring “an early elaboration of a Treaty on complete and general prohibition of tests”, believes the step-by-step approach of negotiations with the United States is justifiable as well. The two processes, the multilateral and the bilateral, are seen as complementary.

Article II of the PTBT, which stipulates amendment procedures, is clear in the provision that the votes of all three original parties must

be included within the majority of votes required for approval of any amendment. However, an amendment conference would certainly bring together an overwhelming majority of States which support the conversion of the partial test-ban Treaty into a comprehensive test-ban Treaty and which realize the far-reaching impact a CTBT would have on all aspects of nuclear disarmament, including restraints on the qualitative arms race and the development of new weapons systems. The significance of the conference, which would include among its participants a number of States that do not subscribe to the NPT, should not be lost. A successful conference would buttress the NPT regime and prepare a more propitious atmosphere for its Review Conference in 1990 and thereafter, possibly for the renewal and continuance of the NPT beyond 1995. The amendment conference would also be a productive forum for the cross-pollination of various approaches towards a realisation of the original promise held out in the preamble of the comprehensive test-ban treaty, the "discontinuance of all test explosions of nuclear weapons for all time".

BACK AT THE TOP OF THE AGENDA: A NUCLEAR TEST BAN

On the twenty-fifth anniversary of the signing of the partial test-ban Treaty, a group of non-nuclear States parties formally activated that Treaty's amendment procedure. The symbolism of their action was simple and direct: a quarter century of waiting for the nuclear Powers to negotiate a comprehensive test-ban Treaty was enough; the non-nuclear weapon states were taking matters into their own hands.

The partial test-ban Treaty's amendment provisions allow any party to the Treaty to initiate consideration of an amendment. The proposal advanced on 5 August 1988 would extend the prohibition on nuclear testing in the atmosphere, in outer space and under water to underground testing. In order for the proposed amendment to be accorded the collective attention of the parties to the Treaty, one third of them must deem it a suitable subject for negotiations. Support for a conference of the parties crossed the one-third threshold in March 1989 an amendment conference will therefore, in all probability, be convened within a year.

The unprecedented origins of this conference could in due course be complemented by an unprecedented conclusion. By agreement of a requisite one half or more of the parties, an amendment could enter into force for all parties. A number of important non-nuclear States could thus be bound to a comprehensive test-ban treaty even without

their direct assent. This feature of the partial test-ban treaty is unique among nuclear arms control regimes.

Involuntary entry into force for the three original nuclear parties (the Soviet Union, the United Kingdom and the United States) is, however, ruled out. The amendment procedure requires that all three be part of any majority for an amendment to take effect.

This, in a nutshell, is both the opportunity and the challenge the partial test-ban Treaty amendment conference presents to the international community. Will the parties to the Treaty bind each other to a comprehensive ban or will the nuclear Powers persist in testing and be joined in due course by a host of newcomers?

The Test Ban and Nuclear Non-Proliferation

This question takes on a special urgency inasmuch as the Treaty on the Non-Proliferation of Nuclear Weapons comes up for a periodic review in 1990. Participants in the reviews of 1975, 1980 and 1985 were preoccupied by one question in particular: When will nuclear testing end? This time, that question can receive attention in advance. The 1990 Review Conference is scheduled for August; the first session of the amendment conference can, and should, be held before that date.

In its turn, the 1990 Review Conference could give an impetus to the work of a reconvened session of the partial test-ban Treaty amendment conference in 1991. Indeed, it is quite likely that the non-nuclear weapon states parties to the non-proliferation Treaty will insist that a comprehensive test-ban treaty be concluded well before 1995. That is the year in which the future of the non-proliferation Treaty is subject to the will of the majority of its parties. The nuclear and non-nuclear parties will, in this case, have an absolutely equal say on "whether the Treaty shall stay in force indefinitely, or shall be extended for an additional fixed period or periods".

Clearly the non-nuclear states, indeed even the non-aligned States among them, can essentially dictate the terms of the 1995 decision. If they are fully satisfied with the performance of the non-proliferation Treaty they could have it enter into force permanently. If they are dissatisfied, they could extend it for as little as a single day. In between these extremes are the more likely, and more interesting, political options which would link extension of the Treaty to concrete results ending the nuclear arms race.

It can thus be appreciated why the advocates of the effort to amend the partial test-ban Treaty have been confident that the nuclear parties

would co-operate in the convening of the conference. Indeed, all three affirmed at the United Nations General Assembly that they would carry out their legal obligations as the Depositary Governments for that Treaty. The non-proliferation Treaty connection is also expected to keep the nuclear Powers on their best behaviour at the amendment conference, both in its first session in 1990 and in sessions following the Review Conference of the Parties to the Non-Proliferation Treaty.

Any attempt to delay or stall negotiations at the amendment conference would not only constitute non-compliance with Treaty commitments, it would also prevent other parties from fulfilling their obligations. In article VI of the non-proliferation Treaty *all* parties to that Treaty have undertaken to “negotiate in good faith on effective measures relating to cessation of the nuclear arms race at an early date”. A comprehensive test-ban treaty is the premier “effective measure”, and “an early date” certainly means some time before the expiration of the original term in force of the non-proliferation Treaty!

The Cynic’s View

Notwithstanding these legal and political points, a sense of incredulity pervades certain governmental and intellectual circles regarding the prospects for successful multilateral comprehensive test-ban negotiations within the partial test-ban Treaty framework or, for that matter, any other venue. Of course, similar skepticism was evidenced about the chances for even initiating the amendment process, and then about obtaining the one-third backing. These counter-examples do not, however, impress people whose skepticism is rooted in cynicism. The cynic takes a *realpolitik* view of international relations, which assumes that all major States are bent upon regional or global dominance, and that true collective endeavour is ineffective or delusive.

In relation to the “threshold” nuclear Powers, this perspective assumes that any expression by these nations of a desire to promote nuclear disarmament is actually a cover for further armament. Evidence that these countries are in fact arming themselves with modern weapons is taken as proof positive. Their advocacy of arms-control measures is a “cost-free” exercise in self-righteousness, this thinking goes; they would have acquired more expensive weaponry long ago had they been able to afford it. In relation to the “declared” nuclear Powers, this perspective assumes that arms control proposals are designed either to achieve an unfair advantage or to serve as a cover for further armament.

The Threshold States and the Amendment Effort

Let us then take a look at what might be expected of these countries as the amendment effort unfolds. A brief historical digression is in order here. When in 1977 the Carter Administration began to look into the modalities for following through on President Jimmy Carter's campaign promise of a comprehensive test-ban treaty, Charles van Doren, Assistant Director of the United States Arms Control Disarmament Agency for Non-Proliferation, informally broached the possibility of using the partial test-ban Treaty's amendment provisions.

One reason this course of action was not pursued in 1977 was that neither Argentina nor Pakistan was party to the partial test-ban Treaty. To use the Treaty framework to bind India and Brazil to an amended Treaty while leaving their chief rivals unbound would be regarded as inequitable by these important countries. Indeed, in such circumstances, either one might consider itself justified in resorting to the Treaty's provision for withdrawing from the partial test-ban Treaty because of "extraordinary events... jeopardiz(ing) the supreme interests of its country".

Yet it is worth noting that both Brazil and India have supported the partial test-ban Treaty amendment resolutions in the United Nations General Assembly from the beginning, in 1985, when neither Argentina nor Pakistan were parties to the Treaty. Since then, in 1986 and 1987, Argentina and Pakistan respectively have acceded to the partial test-ban Treaty. They did so even while discussions of amending it into a comprehensive test-ban treaty were well advanced. Indeed, once it became a party to the Treaty, Argentina changed its abstention to a positive vote for the amendment effort, while Pakistan has always supported it.

India first felt pushed to acquire nuclear weapon capability by a series of border incidents in the 1960s with its nuclear armed neighbour, China. One might then expect India not to consider Pakistan's adherence to the partial test-ban Treaty as sufficient in itself, since China continues to stand apart. Yet, in March 1989, India joined the other parties to the partial test-ban Treaty in requesting a conference to consider converting the Treaty into a comprehensive test-ban treaty.

These considerations might not satisfy a cynic, who would view these actions as posturing, since these nations could safely assume that at least one of the original nuclear parties would block any Treaty amendment.

The Nuclear Testing Talks

What then about the nuclear Powers? A benevolent interpretation of the bilateral Nuclear Testing Talks, started in 1987, would be that it would be easier to get United States Senate approval of a comprehensive test ban, with its technically less demanding verification requirements, once agreement has been reached on the more complex verification arrangements for the 1974 threshold test-ban Treaty and the 1976 peaceful nuclear explosions Treaty to be ratified. However, if the views of former Deputy Assistant Secretary of Defence for International Security Policy, Frank Gaffney, are to be taken as representative, cynics might well see the Nuclear Testing Talks as an exercise in procrastination:

“The thinking goes like this: The more time wasted on discussions and experimentation of monitoring techniques irrelevant to the verification of (a regime banning all underground testing), the easier it will be to stave off demands for the more constraining comprehensive test ban.”

The Soviet motivation for agreeing to these talks is harder to divine. Following on the heels of the eighteen-month testing moratorium, their acceptance of this agenda seemed a major step backwards. On the other hand, it was consistent with a deliberate policy of engaging the United States on every security issue and seeking to achieve agreement wherever possible. The guiding philosophy seemed to place greater emphasis on the overall East-West climate than on the specific merits of a single agenda item, the hope presumably being that an improved climate would in the long run do more to help achieve the desired ends.

Again, a cynic could dismiss such analysis as wishful delusion and/ or artful deception. Still, the Soviet Union has been supportive of every possible approach to a comprehensive test-ban treaty, including the partial test-ban Treaty amendment approach. Indeed, General Secretary Mikhail S. Gorbachev gave an early endorsement of his approach in his landmark speech in January 1986. Soviet co-operation with official and unofficial projects to develop verification for a comprehensive test ban has come as a welcome change after years of only the most grudging concessions.

Are all these States, threshold and nuclear, which support the amendment effort only masquerading behind the presumed permanence of United States and United Kingdom opposition to a comprehensive test ban? There are a lot of countries with no nuclear arsenals or aspirations that would like to find out. There is only one way to do that: to persuade the United States and the United Kingdom to change

their positions. Is this impossible? What is one to make, for example, of the many statements of support for an end to testing made by United States Presidents and their top advisers, both while serving and in retirement? Poll after poll has shown that negotiating a comprehensive test-ban treaty would be considered a great achievement by the American public. Indeed, the United States Senate gave over two-thirds support to a call for comprehensive test-ban negotiations, while the House of Representatives is even prepared to enforce a moratorium on nuclear testing through Congressional control of the purse strings. By these indicators, it is certainly well within the realm of possibility that the United States would return to a position of support for a comprehensive test-ban treaty.

Basically, it is clear that Soviet-American relations are entering a period of "normalisation". None too soon, attention is turning to the multiple dangers of weapons transfers of all kinds on a global scale.

Can the United States Government successfully pursue a policy designed to curb the spread of chemical weapons and ballistic missiles if the foundation of the non-proliferation treaty is threatening to erode? While these issues can and should be addressed separately, they are not unconnected. The bargain that was struck to control the spread of nuclear weapons must be seen to be working in order for nations to have confidence in new non-proliferation efforts in related fields. In the absence of a comprehensive test-ban treaty, there is a prevailing belief that the bargain has not been fulfilled.

The NPT Bargain Revisited

The passage of time since 1968, when the non-proliferation treaty was negotiated and signed, does not absolve the nuclear parties of their undertakings in article VI of the Treaty. On the contrary, it heightens their responsibility to avoid further delay. Let us recall the promises made in 1968 by the leaders of the nuclear Powers in recognition of their Treaty commitments. Speaking on behalf of President Lyndon B. Johnson, United States Ambassador Arthur Goldberg said:

"Article VI was added, and subsequently strengthened to give further effect to the principle that the treaty should embody an acceptable balance of obligations.(...) the permanent viability of this treaty will depend in large measure on our success in the further negotiations contemplated in Article VI."

Soviet Ambassador Vasili Kuznetsov declared expansively that "Never before in all of history have States made such a commitment".

British Prime Minister Harold Wilson, speaking to the United Nations General Assembly, said, referring to the first scheduled Review Conference:

“In short, we are given five year’s notice—the two major Powers particularly—to produce real progress towards a better and saner world.”

At the 5 March 1970 ceremony marking the entry into force of the Treaty, Prime Minister Wilson reiterated these points:

“We know that there are two forms of proliferation, vertical as well as horizontal. The countries which do not possess nuclear weapons and which are now undertaking an obligation never to possess them, have the right to expect that the nuclear weapon states will fulfil their part of the bargain.”

At the insistence of the non-nuclear nations, the non-proliferation Treaty’s preamble had been expanded to reiterate the determination expressed in the partial test-ban Treaty to achieve a comprehensive test-ban treaty. Their interpretation of this issue has never wavered. The latest Review Conference of the Parties to the NPT, held in 1985, called for comprehensive test-ban negotiations to be accorded the highest priority and to begin that year. Only by recourse to the partial test-ban treaty amendment provisions have the non-nuclear States been able to assure an action they justifiably consider long overdue.

The partial test-ban Treaty amendment conference would, thus, force all three of its nuclear weapon parties to come to grips with this long-running controversy. The consequences of renegeing on the non-proliferation Treaty bargaining are immense. The task of formulating a new bargain is not only immense, there is no guarantee it can be sold to the non-nuclear world. In short, there is an urgent need for an open debate in these countries on whether to stay the course and keep the faith with a test ban or set off into uncharted waters.

A General Debate

The rest of the world has a tremendous stake in the outcome of the debate as well. The drive by the non-aligned world to call for amendment of the partial test-ban Treaty and developments leading up to the amendment conference, such as the positions taken by Western allies, will provide a means of influencing the nuclear Powers’ debate. In short, every nation is being asked to consider the role that a comprehensive test ban could and should play in the global search for survival in the nuclear age. This will be the overriding theme of the

first session of the partial test-ban Treaty amendment conference. It is a "general debate" that is long overdue in the international community.

It is also a debate that, if rationality prevails, can confidently be expected to reaffirm the importance of banning all nuclear testing. It is not without reason that a comprehensive test-ban treaty has received so much attention from the United Nations General Assembly and the Conference on Disarmament over the last several decades. What is hard to understand is why testing continues after 1,500 explosions. The technical/strategic arguments have received a good deal of attention recently. It is only rarely noted that these same arguments would justify nuclear weapon tests by every nation on Earth.

In his statement to the General Assembly at its third special session on disarmament, Prime Minister Rajiv Gandhi rejected the notion of a world based on two sets of rules, with these eloquent words:

"(It is not) acceptable that those who possess nuclear weapons are free of all controls while those without nuclear weapons are policed against their production. History is full of such prejudices paraded as iron laws; that men are superior to women; that the white races are superior to the coloured; that colonialism is a civilising mission; that those who possess nuclear weapons are responsible and those who do not are not."

White the technicians in the nuclear weapon laboratories and their supporters in the government may view nuclear weapon tests as a routine matter, each explosion is an affront to those national leaders around the world who advocate national restraint and hold out hope for multilateral arms control efforts. They maintain this position in the face of local advocates of *realpolitik*, who argue that their nation's regional influence will be subordinated to the Super-Powers as long as the Super-Powers have a monopoly on the bomb. Each nuclear weapon test has the effect, whether intended or not, of strengthening the hand of these cynics and undermining the more globally-minded leadership.

A Revival of Multilateralism

Cynicism, feeding upon itself, could generate a self-fulfilling prophecy. The partial test-ban Treaty amendment conference calls on people in East and West, North and South to shake off cynicism and rise to a higher standard. The progress of the amendment effort to date is a testament to the abiding commitment of many nations to a

comprehensive nuclear-test ban. Those whose commitment has been less firm should consider most carefully the consequences of abusing the "idealism" of the proponents of restraint. The non-proliferation Treaty cannot be renewed in 1995 without the co-operation of the non-nuclear States. The prospects for multilateralism are thus looking up. The partial test-ban Treaty amendment conference could be the first major test of this new trend in international affairs. The common search for common security is under way.

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AMENDMENT CONFERENCE TO THE PARTIAL TEST-BAN TREATY

“A guaranteed end to all nuclear testing in all environments is a fundamental objective of the free world. We are deeply convinced that the achievement of this objective would serve our best national interests and the national interests of all the nations of the world.”

Thus, President Kennedy and Prime Minister Mac-millan began their joint statement of 27 August 1962. That same day, in the recently established Eighteen-Nation Committee on Disarmament (ENDC) in Geneva, the representatives of the United States and the United Kingdom jointly submitted alternative draft treaties. The first banned “all nuclear weapon tests in all environments for all time” and contemplated an international verification system. The second banned tests in the atmosphere, outer space and under water without verification. A year later a partial test ban based on the second draft was signed in Moscow.

An “Amendable” Partial Test Ban

The treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water was signed on 5 August 1963 by the USSR, the United Kingdom and the United States of America, the original parties to the Treaty. Known as the Moscow or partial-test-ban Treaty (PTBT), it entered into force on 10 October of that year. Today there are 117 States parties to the Treaty.

The Treaty is of unlimited duration and is one of the pillars of the nuclear disarmament edifice which the international community has been building in the second half of the twentieth century. Although China and France continued nuclear testing in the atmosphere until the late 1970s, today no one—whether a party to the Treaty or not—would dare to do so. Therein lies the not insignificant value of the PTBT.

The PTBT is a treaty with few provisions. It has but five articles. Article I bans nuclear weapon tests in the atmosphere, in outer space, or under water and also prohibits any underground nuclear test 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”.

Article II deals with the procedure for amendment of the treaty and articles III to V contain the usual provisions regarding such matters as ratification, entry into force, registry, duration and withdrawal. Of these provisions, the one concerning withdrawal was considered important in 1963.

What is the origin of article II of the Treaty? The PTBT was based on the partial test-ban draft submitted on 27 August 1962 by the United Kingdom and the United States. The other draft which they put forward that day— the one calling for a comprehensive test ban (CTB)—included provisions for the establishment of an international scientific commission which was to be responsible for verification of the treaty and which was to meet once a year to review its operation and, should the need arise, to approve amendments. Since the partial test-ban draft did not contain a similar provision, the co-sponsors added an article on amendments calling for the convening of an amendment conference upon the request of one third or more of the parties. For an amendment to be approved, it had to obtain two thirds of the votes of the parties, including all three original parties. On the other hand, the draft permitted nuclear explosions for peaceful purposes since, at that time, the United States Atomic Energy Commission had embarked on an ambitious programme called Plowshare.

However, in 1963, at the request of the USSR, the provision on peaceful explosions was eliminated. The United Kingdom and the United States requested, in turn, that the majority required for approval of an amendment be reduced from two thirds to a simple majority, including the original parties. They felt that in that way it would be easier to amend the treaty in order to permit such explosions in the future.

It could therefore be said that the two substantive provisions of the Treaty are the partial ban of nuclear tests and the possibility of amending it. The idea of amending or extending the partial test-ban Treaty to include underground tests has been put forward in the past by both the United States and the Soviet Union. On 27 January 1966, United States President Johnson stated that the United States

“persists in its belief that the perils of proliferation would be materially reduced by an extension of the limited test ban treaty to cover underground nuclear tests”.

On 14 December 1967 the USSR representative stated in the First Committee of the General Assembly:

“... We are ready at any time to negotiate the extension of the 1963 Moscow Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and under Water to underground tests, thereby making the Treaty all-embracing.”

Three Decades of Patience

In its day, almost thirty years ago, the PTBT was proclaimed a significant first step in the field of nuclear disarmament. However, upon signing the Treaty, the United States Secretary of State pointed out that

“it is not yet possible for us to guarantee now what the significance of this act will be. History will eventually record how we deal with the unfinished business of peace”.

One should also recall the words of the United Kingdom representative on 30 July 1963, a few days before the Treaty was signed:

“ I hope too that we shall put this partial test ban treaty, welcome as it is, in its proper perspective. Clearly it will not in itself reduce armaments. Moreover, it may not necessarily prevent the proliferation of nuclear weapons. On the other hand, it would be a significant first step in those directions.”

If, in 1991, we try to “put the Treaty in its proper perspective”, we reach a rather different conclusion as to its value. What history has recorded over the last 27 years is an unbridled nuclear-arms race. In the 1963 Moscow Treaty the USSR, the United Kingdom and the United States proclaimed themselves “determined to continue negotiations” aimed at achieving “the discontinuance of all test explosions of nuclear weapons for all time”, a pledge they reiterated in the 1968 non-proliferation Treaty (NPT). Between 1945 and 5 August 1963, those three States had carried out an average of 30 tests per year. Since 1963 the average has been over 40 tests a year. Since 1963 the Conference on Disarmament in Geneva has not been able to move forward substantially in the drafting of a multilateral agreement banning all nuclear weapon tests.

We are often told that the 1974 threshold test-ban Treaty (TTBT) between the USSR and the United States is a measure aimed at reducing

underground tests, but the Moscow Treaty does not—nor does the NPT—speak of a *partial* ban on underground testing. It does not speak either of limiting those tests to a certain threshold or, even less, of a 150-kiloton limit or threshold, or of “reducing to a minimum” those tests. Moreover, the threshold agreed on in the TTBT is equivalent to over ten times the explosive power of the bomb that destroyed Hiroshima in 1945.

Until 1963, the strategic nuclear arsenals of the Super-Powers included, above all, a fleet of long-range heavy bombers, as well as some intercontinental ballistic missiles (ICBMs) and sea-launched ballistic missiles (SLBMs). Today, those arsenals include, above all, ICBMs, SLBMs, cruise missiles, intermediate- and short-range ballistic missiles, and some bombers. The increase in the destructive power of those arsenals has kept pace with their qualitative advances.

Twenty-seven years ago the United Kingdom and the United States were ready to ban for ever *all* nuclear weapon tests if that ban contemplated an international verification system. The USSR appears ready today to accept an international verification system that includes on-site inspections. Why, then, is it not possible to reach an agreement? Because the United Kingdom and the United States, together with their allies in the North Atlantic Treaty Organisation (NATO), resort today to the same arguments of thirty years ago, except that they use them for completely opposite purposes. In 1962 they said that a comprehensive test ban was “the key to disarmament”, since it would be “an important first step in bringing the arms race under control”. In other words, a test ban would stop the development and improvement of nuclear arsenals. Today, they tell us that a comprehensive test ban “would be premature, and perhaps even destabilising”, since their security depends on deterrence based on the possession of nuclear weapons and that means continued underground nuclear testing to ensure that such weapons remain effective and up to date.

The political and ideological transformation that is occurring in Europe is, in turn, transforming NATO’s military doctrines, the central element of which has for decades been the deterrent power of nuclear arsenals. That deterrent power—if it ever was of value in the past—no longer makes sense in a Europe very different from that of 1945. Who is to be deterred with nuclear weapons in the 1990s? It is obvious that the military leaders in both Washington and Moscow, and thus in London and even Paris and Beijing, will have to change their view of the world, adapting it to the new realities, and they will also have to

change the role they assign to nuclear weapons in their respective defence doctrines.

If there really is a will to follow the path towards genuine nuclear disarmament, we must begin where we left off in 1963, namely, by shutting the door on the vertical proliferation of nuclear arsenals. And to do so we must ban *all* nuclear weapon tests. There is no point in reducing certain types of weapons if, at the same time, others are developed and improved. Moreover, what is the sense of removing nuclear warheads from one region of the globe if later they are going to appear in another? There is no sense in exchanging land-based weapons for sea-launched or air-launched ballistic missiles. What is occurring today is rather a re-deployment of weapons, a redistribution—the weapons are still there. This might have a positive, momentary impact on public opinion, especially in Europe, but it cannot be seen as a genuine disarmament measure.

Underground, Out of Sight and Out of Mind?

The history of the negotiations aimed at a complete ban on all nuclear tests is one of squandered opportunities. Imaginative proposals have been put forward to bridge the perceived differences between the Super-Powers, and the technical aspects of verification have been thoroughly studied. And yet, nuclear testing continues. What has been lacking is the political will to reach an agreement, and the lead must come from Washington and Moscow.

It is true that year after year the United Nations General Assembly has called on the nuclear-testing States to conclude a comprehensive test-ban treaty. In fact, it has adopted over 70 resolutions on this item alone and it is quite evident that the overwhelming majority of nations would welcome such a treaty. But, it is also true that those nations have not exercised fully their political leverage. Moreover, the public in many countries either has lost interest in the test-ban issue or has shifted its attention to other, apparently more pressing, questions. The fact is that, since testing went underground and the photographs of nuclear mushrooms of atmospheric blasts disappeared from the newspapers, the issue has not aroused public opinion as it did in the late 1950s and early 1960s. And in the Conference on Disarmament in Geneva, whose work in 1962 began with a flurry of publicity and the personal involvement of the leaders of the United States, the United Kingdom and the USSR, the issue has slowly been buried in the soporific confines of the Council Chamber of the Palais des Nations.

In recent years, the issue of a comprehensive test-ban treaty has gained increasing visibility. In 1986 the Heads of State or Government of Argentina, Greece, India, Mexico, Sweden and the United Republic of Tanzania underscored the urgency of achieving a comprehensive test-ban treaty and offered their good offices for the establishment of a verification system. On the other hand, the USSR's moratoriums on testing have led some analysts to question the need for further testing by others. At last year's Fourth Review Conference of the Non-Proliferation Treaty the issue figured prominently, especially in the light of the fact that in 1995 a decision will be taken regarding extension of the NPT. A comprehensive treaty has also been at the centre of discussions concerning the importance of laying the groundwork for a truly universal and genuine non-proliferation regime. Moreover, a group of non-governmental organisations, headed by Parliamentarians for Global Action, has also been advocating a comprehensive treaty and in 1985 suggested that parties to the Moscow Treaty avail themselves of the provisions of the Treaty by calling for an amendment conference aimed at converting it into a comprehensive treaty. The United Nations General Assembly endorsed the idea, hence the decision of Indonesia, Mexico, Peru, Sri Lanka, Venezuela and Yugoslavia in 1988 to submit a proposal for amendment.

Upon the request of one third of the States parties, the Amendment Conference was convened, but it was not easy. The depositary Governments at first arrogated to themselves the right to decide how, when and where to hold the Amendment Conference. According to recognised international practice, the depositaries should have limited their role to carrying out their obligation to inform the other parties of that request and to act impartially. It was up to the parties as a whole to take the decisions regarding the organisation and preparatory work of the Conference. That was achieved at the Meeting of the States Parties for the Organisation of the Amendment Conference, held in New York from 29 May to 8 June 1990, in accordance with United Nations General Assembly resolution 44/106 of 15 December 1989. That session of the Conference was followed by a one-week session from 4 to 8 June and a substantive session, held from 7 to 18 January 1991.

The principal purpose of the Amendment Conference is to convert the partial test-ban treaty into a *comprehensive* test-ban treaty. The amendment to the treaty proposed by the six nations that initiated the process consists of three parts: first, the addition of a new article VI providing that

“The protocols annexed to the present Treaty constitute an integral part of the Treaty”;

secondly, the text of a “Protocol I”, which would ban underground nuclear tests; and thirdly, a draft “Protocol II” on the verification of the proposed comprehensive test ban.

Given the attitude of two of the depositaries, it was obvious that the amendment would not be adopted. But, the broad-ranging general debate and the discussion of the verification protocol, together with the participation of non-governmental organisations, served to underline the widespread international support for a comprehensive treaty. The General Assembly was fully conscious of this situation when it recommended, in its resolution 45/50 of 4 December 1990, “that arrangements be made to ensure that intensive efforts continue, under the auspices of the Amendment Conference, until a comprehensive nuclear-test-ban treaty is achieved”.

The vast majority of the parties, thus, sought agreement on a follow-up mechanism that would allow the Conference to continue its work after 18 January. The six initiators, together with Nigeria, the Philippines, Senegal and the United Republic of Tanzania, submitted a draft decision to this effect:

Acknowledging the complex nature of certain aspects of a comprehensive test ban, especially those with regard to verification of compliance and possible sanctions against non-compliance, the States Parties were of the view that further work needed to be undertaken. Accordingly, they agreed to reconvene the Conference no later than September 1993 and to establish an intersessional working group, composed of 15 to 20 countries, in order to continue the consideration of verification of compliance of a comprehensive test-ban treaty. The working group will submit a report to the Conference at its reconvened session.

Later, in a spirit of compromise, they amended their proposal to read:

Accordingly, they agreed to mandate the President of the Conference to conduct consultations with a view to achieving progress on those issues and resuming the work of the Conference at an appropriate time.

That was the text of the decision adopted on 18 January by the Conference by 74 votes to 2 (United Kingdom and United States), with 19 abstentions. All of the non-aligned countries supported the decision, as did one of the depositaries (USSR) and a number of countries from the Group of Western European and Other States (Australia, Denmark, Iceland, Ireland, New Zealand, Norway and Sweden).

The President of the Conference, Foreign Minister Ali Alatas of Indonesia, will now have to continue his skilful handling of the work of the Conference. However, to fulfil his mandate, he will have to receive the active support of the parties to the partial-test-ban treaty. The consultations he will conduct and the future sessions of the Conference must be seen also in the context of the evolution of world public opinion regarding a comprehensive test-ban treaty. Moreover, a comprehensive test ban should be considered one of the key elements in a series of measures to be implemented in the coming years in order to ensure that the international community enters the next century with a real vertical as well as a horizontal non-proliferation regime. One important aspect of that future regime will be the system for verifying compliance with a comprehensive test-ban treaty; another should be the sanctions that may result from non-compliance.

The Amendment Conference should, thus, be seen as part of a wider process. It should be seen against the background of what happens (or does not happen) in the Conference on Disarmament in Geneva and of the repeated appeals made in this regard by the General Assembly, the Secretary-General of the United Nations and the international community in general. The Conference should also be placed on a parallel track with the 1995 extension conference on the non-proliferation treaty. Over the next five years there will necessarily be a collective review of the present nuclear non-proliferation regime in order to identify measures aimed at enhancing the possibilities of extending the non-proliferation treaty well-beyond 1995. For many countries the Amendment Conference is a central element in that collective review.

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DRAFT COMPREHENSIVE NUCLEAR TEST BAN TREATY*

The States Parties to this Treaty, hereinafter referred to as the “States Parties”,

Convinced that recent fundamental international political changes provide opportunities to take further effective measures against the proliferation of nuclear arms,

Welcoming the conclusion of the START I and START II agreements, envisaging drastic reductions in present strategic nuclear arsenals,

Underlining the importance of the prompt implementation of these and other international disarmament and arms regulation agreements,

Stressing the need for further reductions of tactical and strategical nuclear weapons and their delivery systems,

Declaring their intention to undertake further measures towards nuclear disarmament and against the proliferation of nuclear weapons,

Recalling the determination expressed by the Parties in the Preamble to the 1963 Treaty Banning Nuclear Weapons Tests in the Atmosphere, in Outer Space and Under Water to seek to achieve the discontinuance of all test explosions of nuclear weapons for all time, and to continue negotiations to this end,

Recalling that the Parties in the above-mentioned Treaty undertake to prohibit, to prevent and not to carry out any nuclear weapon test explosion, or any other nuclear explosion in the atmosphere, in outer space and under water,

* Issued as a document of the Conference on Disarmament (CD/1232). The two tables attached to the Protocol are not reproduced.

Convinced that a ban on all nuclear weapon test explosions, and any other nuclear explosions, is an important instrument in preventing the further proliferation of nuclear weapons,

Have agreed as follows:

Article I: Basic Obligations

1. Each State Party undertakes to prohibit, to prevent, and not to carry out, in any environment, any nuclear weapon test explosion, or any other nuclear explosion at any place under its jurisdiction or control.
2. Each State Party undertakes, furthermore, to refrain from causing, encouraging, assisting, preparing, permitting or in any way participating in the carrying out anywhere of any nuclear explosion referred to in paragraph 1 of this Article.

Article II: Implementation

1. The States Parties, in order to achieve the objectives of the Treaty and to ensure the implementation of the provisions of the Treaty, entrust the International Atomic Energy Agency, hereinafter referred to as the "Agency", with verification of compliance with the Treaty, as defined in Article III B.
2. The States Parties undertake to cooperate in good faith with the Agency in the exercise of its functions in accordance with this Treaty.
3. In order to fulfil its obligations under the Treaty, each State Party shall designate or set up a National Authority and shall so inform the Agency upon entry into force of the Treaty for such a State Party. The National Authority shall serve as the national focal point for liaison with the Agency and with other States Parties.
4. Each State Party undertakes to take any measures it considers necessary to prohibit and prevent any activity in violation of the provisions of the Treaty anywhere under its jurisdiction or control.
5. Each State Party shall inform the Depositary of the legislative and administrative measures taken to implement the Treaty.

Article III: Obligations of States Parties and the Agency

A. States Parties

1. Each State Party undertakes to establish in cooperation with the Agency an effective international and universal monitoring regime.

The regime includes the establishment of international monitoring systems based on seismological data, hydroacoustic data and data on radionuclides in the atmosphere and the use of additional relevant techniques.

The arrangements for these international monitoring measures are laid down in the Protocol, annexed to this Treaty.

Each State Party undertakes to establish the necessary facilities to participate in these cooperative measures and through its National Authority to establish the necessary communication channels with the Agency. These arrangements shall be operative on the entry into force of this Treaty.

2. Large non-nuclear explosions carried out by a State Party shall be, conducted in accordance with provisions laid down in the Protocol, annexed to this Treaty.

B. The Agency

In the exercise of its functions in accordance with this Treaty, the Agency shall

- coordinate the international monitoring regime including the exchange of seismological data, data on radionuclides in the atmosphere and other data relevant to the monitoring of compliance with the Treaty;
- endeavour, at the request of a State Party, through cooperation with (he National Authorities of the States Parties and through other means, to clarify inconsistencies that may occur with regard to events relevant to compliance with the Treaty;
- verify, when inconsistencies are not clarified, compliance with the Treaty through on-site inspection in accordance with Article IV.

Article IV: Verification

1. Each State Party shall, in order to assist in the interpretation of an event that may be of relevance to the Treaty at any place under its jurisdiction or control, provide such additional information as the Agency might request.
2. Each State Party may use national technical means of verification at its disposal in a manner consistent with generally recognised principles of international law to verify compliance with the Treaty.

3. If the nature of an event cannot be clarified through the measures specified in paragraphs 1 and 2 of this Article, each State Party is entitled to request an on-site inspection on the territory of any other State Party for the purpose of ascertaining compliance with this Treaty. The requesting State Party shall state the reasons for its request, including the evidence available. Such requests shall be addressed to the Director General of the Agency, who shall bring the matter to the attention of the Board of Governors of the Agency.
4. If the Board of Governors decides to conduct an on-site inspection, the relevant State Party is under obligation to comply with the Board's decision. Such inspections shall be conducted by the Agency, and the report shall be transmitted by the Director-General of the Agency to the Board of Governors and all States Parties. The Board of Governors shall decide on and report any findings of non-compliance essential to the achievement of the objectives of the Treaty or of the spirit of the Treaty, to the Security Council of the United Nations and all States Parties. Decisions on questions mentioned in this paragraph shall be made by the Board of Governors by two-thirds majority of those present and voting. Procedures for such inspections, including the rights and functions of the inspecting personnel, are laid down in the Protocol annexed to this Treaty.
5. A State Party on whose territory an event has occurred may invite the Agency to conduct an on-site inspection.

Article V: Complaints

Any State Party which finds that any other State Party is acting in breach of obligations deriving from the provisions of the Treaty may lodge a complaint with the Security Council of the United Nations. Such a complaint shall include all possible evidence confirming its validity.

Article VI: Privileges and Immunities

1. In order to enable them to carry out the functions entrusted to them under this Treaty, the States Parties to this Treaty shall grant privileges and immunities to the Director-General and personnel of the Agency in accordance with the Vienna Convention on Diplomatic Relations of 18 April 1961.

2. Provisions regarding privileges and immunities in connection with on-site inspections are contained in the Protocol annexed to this Treaty.

Article VII: Status of Protocol

The Protocol to this Treaty constitutes an integral part of the Treaty.

Article VIII: Settlement of Disputes

If any dispute arises between two or more States Parties or between two or more States Parties and the Agency concerning the interpretation or application of the present Treaty, the Parties concerned shall consult among themselves with a view to having the dispute resolved by negotiation, inquiry, mediation, conciliation, arbitration, or other peaceful means of their own choice. Any dispute may, with the consent of all parties to the dispute, be referred to the International Court of Justice for settlement.

Article IX: Amendments

At any time after the entry into force of this Treaty, any State Party may propose amendments to the Treaty or to the annexed Protocol. Any proposal for an amendment shall be communicated to the Depositary, who shall circulate it to all States Parties, and seek their views on whether a conference should be convened to consider the proposal. If a majority, that shall not be less than thirty of the States Parties, including the nuclear weapon states, so agree, the Depositary shall promptly convene a conference to which all States Parties shall be invited. The Conference may adopt amendments proposed, if a majority of the States Parties present and voting, including the nuclear weapon states, so agree. Amendments shall enter into force for each Party accepting them upon their adoption by the Conference and thereafter for each remaining Party on the date of acceptance of the amendments by such a Party.

Article X: Review of the Treaty

Five years after the entry into force of this Treaty, or earlier if it is requested by a majority of the States Parties to the Treaty by submitting a proposal to this effect to the Depositary, a conference of States Parties to the Treaty shall be held at..., to review the operation of the Treaty, with a view to ensuring that the purposes of the preamble and the provisions of the Treaty are being realised. Such review shall take into account any new scientific and technological developments relevant to

the Treaty. At intervals of five years thereafter, a majority of the Parties to the Treaty may obtain, by submitting a proposal to this effect to the Depository, the convening of further conferences with the same objective of reviewing the operation of the Treaty.

Article XI: Entry into Force

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 this Article may accede to it at any time.
2. This Treaty shall be subject to ratification by Signatory States.
3. This Treaty shall enter into force upon the deposit of instruments ratification by forty States, including the nuclear weapon states. 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 January 1967.
4. For those States whose instruments of ratification or accession are deposited after 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.

Article XII: Reservations

The Articles of this Treaty, including the Articles of the annexed Protocol, which constitutes an integral part of the Treaty, shall not be subject to reservations.

Article XIII: Depositary

1. The Secretary-General of the United Nations shall be the Depositary of this Treaty and shall receive the instruments of ratification and instruments of accession.
2. The Depositary shall promptly inform all signatory and acceding States of the date of each signature, the date of deposit of each instrument of ratification or of accession and the date of the entry into force of this Treaty and of any amendments thereto, any notice of withdrawal, and the receipt of other notices. He shall also inform the Security Council of the United Nations of any notice of withdrawal.
3. This Treaty shall be registered by the Depositary in accordance with Article 102 of the Charter of the United Nations.

Article XIV: Duration and Withdrawal

1. This Treaty is of a permanent nature and shall remain in force indefinitely, provided that, in the event of a violation by any party of a provision of this Treaty essential to the achievement of the objectives of the Treaty or of the spirit of the Treaty, every other Party shall have the right to withdraw from the Treaty.
2. Withdrawal shall be effected by giving notice twelve months in advance to the Depositary, who shall circulate such notice to all other Parties.

Article XV: Official Languages

This Treaty, of which the Arabic, Chinese, English, French, Russian and Spanish texts are equally authentic, shall be deposited with the Secretary-General of the United Nations, who shall send duly certified copies thereof to the Governments of the signatory and acceding States.

In witness whereof, the undersigned, duly authorised thereto, have signed this Treaty.

**PROTOCOL TO THE DRAFT COMPREHENSIVE
NUCLEAR-TEST-BAN TREATY****Section I: General Provisions**

Article 1. The International Atomic Energy Agency, hereinafter called the Agency, shall be entrusted with verification functions specified in Article III B. and IV of the Treaty.

Article 2. Each State Party undertakes, in accordance with Article III A. 1. of the Treaty, to cooperate in good faith with each other and the Agency to facilitate the verification of compliance with this Treaty.

Article 3. The costs for the Agency's verification functions, mentioned in Article 1, shall be borne by the States Parties in accordance with the United Nations scale of assessment.

Section II: The Agency

Article 4. In performing its verification functions, mentioned in Article 1, the Agency shall:

- establish and operate an International Data Centre to be the central facility of the international monitoring system based on seismological data, data on radionuclides in the atmosphere,

hydroacoustic data, satellite data and other data relevant to the verification of the Treaty. Easy and free access to all services of the Centre shall be granted to all Parties to the Treaty;

- establish and operate networks of seismological and hydroacoustic stations and stations to monitor radionuclides in the atmosphere;
- conduct on-site inspections and observations relevant to the verification of the Treaty;
- cooperate with National Authorities of the States Parties to resolve uncertainties regarding compliance with the Treaty;
- assist States Parties on other issues of verification of the Treaty.

Article 5. The Agency shall establish, and the Board of Governors of the Agency shall approve, the following Operational Manuals to guide the operation of the various components of the verification system:

- Operational Manual for International Exchange of Seismological Data;
- Operational Manual for International Exchange of Data on Radionuclides in the Atmosphere;
- Operational Manual for International Exchange of Hydroacoustic Data;
- Operational Manual for Satellite Data Processing;
- Operational Manual for International On-site Inspections;
- Operational Manual for On-Site Observations of Non-Nuclear Explosions.

These Manuals are not integral parts of the Treaty and can be changed by the Board of Governors of the Agency. The Agency shall inform the States Parties of any changes in the Operational Manuals.

Article 6. The Agency shall coordinate the operation of the international monitoring network and in particular

- operate the International Data Centre to compile, process and report on seismic data, hydroacoustic data and data on radionuclides in the atmosphere;
- operate a specified network of seismological stations, hydroacoustic stations and stations to measure radionuclides in the atmosphere;
- ensure that the operation of participating seismological stations, hydro-acoustic stations and stations to measure radionuclides

in the atmosphere and their reporting are in compliance with the respective Operational Manuals;

- provide technical support for the installation and operation of seismological stations, hydroacoustic stations and stations to measure radionuclides in the atmosphere;
- compile and evaluate results and experiences of the operation of the monitoring network.

Article 7. The Agency shall assist States Parties in utilising satellite data in order to clarify seismic and other events in relation to this Treaty. The Agency shall operate the International Data Centre to compile, process and report on satellite observations, provided by States Parties or obtained from other sources.

Article 8. The Agency shall receive, compile and report to all States Parties any additional information that a State Party may provide to assist to the interpretation of an event which has occurred on its territory.

The Agency shall forward requests for information made by any State Party to any other State Party on any event relevant to this Treaty occurring on the territory of the latter State. The Agency shall receive, compile and report on any information received in response to such requests.

Article 9. The Agency shall facilitate consultations among States Parties to resolve issues related to the verification of the Treaty.

Article 10. The Agency shall, as specified in the Operational Manual for On-Site Observations of Non-Nuclear Explosions, mentioned in Article 5, conduct on-site monitoring of non-nuclear explosions in excess of 500 tons TNT equivalent, and report the result of such observations to the States Parties. The Agency shall also compile and distribute a monthly list of reported non-nuclear explosions in excess of 100 tons TNT equivalent. The Agency shall also conduct routine inspections at sites which States Parties have declared to be routinely used for the conduct of non-nuclear explosions in excess of 100 tons TNT equivalent.

Article 11. An Advisory Board of international experts shall be established by the Board of Governors of the Agency to provide scientific expertise on verification measures and to assist the Board of Governors in evaluating the methodology and the scientific quality of the procedure used and in assessing the value of new methods to be considered for the verification of this Treaty and which the Board of Governors may wish to report to the Review Conference, mentioned in Article IX of the Treaty.

Section III: The Global Monitoring System

Article 12. Each State Party undertakes to participate in the establishment and the operation of an international monitoring system. This obligation includes the establishment and operation of a two-tiered network of high-quality seismological stations. The first tier, referred to as a network of Alpha stations, is established and operated by the Agency and provides uninterrupted data transmitted on-line to the International Data Centre. The second tier, referred to as a network of Beta stations, is established and operated by the States Parties and provides data in near real time upon request by the International Data Centre.

The States Parties are also obliged to participate in the establishment and operation of a network of high-quality stations to measure radionuclides in the atmosphere. The stations are established and operated by the Agency and provide data promptly to the International Data Centre.

The States Parties are also committed to the establishment and operation of a network of high-quality hydroacoustic stations in the oceans. These stations are established and operated by the Agency and provide uninterrupted data transmitted on-line to the International Data Centre.

Article 13. Each State Party shall have the right to receive all data and information available from the International Monitoring Systems and shall make the necessary arrangement with the Agency through its National Authority.

Article 14. The Agency shall, in cooperation with the States Parties, establish and operate a specified network of high-quality seismological stations. This network consists initially of the stations specified in table 1, annexed to this Protocol. These stations shall fulfil the technical and operational requirements summarised in table 2 and further specified in the Operational Manual for International Exchange of Seismological Data. Uninterrupted data from the Alpha stations shall be transmitted on-line to the International Data Centre.

Article 15. The Agency shall control the quality of the network of Alpha stations and evaluate its overall performance, The Board of Governors of the Agency may amend the network by technically upgrading stations and by adding or deleting stations in the annexed table 1, which is not an integral part of the Treaty.

Article 16. The Agency shall make the necessary legal and other arrangements with the States Parties to establish and operate one or several Alpha stations on its territory. For an existing facility, a State Party shall give the Agency authority to use the station as an Alpha station as specified in the Operational Manual for International Exchange of Seismological Data and to make necessary changes in the equipment and the operational procedures to meet these requirements. A State Party shall cooperate with the Agency to establish a new station at a site to be agreed upon. The State Party shall provide the required land for the station free of charge and cooperate with the Agency in establishing the station and the infrastructure needed to support it. A State Party shall also transfer authority to operate the station or stations, to the Agency and cooperate with the Agency in the routine operation.

Article 17. To supplement the Alpha network, a number of additional high-quality stations referred to as Beta stations shall be established. The Beta stations to be used initially are listed in table 3, annexed to this Protocol. The Beta stations shall be established and operated by the State Party on whose territory it is situated, The Agency shall, if requested, provide technical assistance to a State Party in this regard. The Beta stations shall meet the technical and operational requirements specified in the Operational Manual for International Exchange of Seismological Data. Data from the Beta stations are to be requested by the International Data Centre and shall be immediately available through on-line computer connections.

Article 18. The Agency shall control the quality of the network of Beta stations and evaluate its overall performance. The Board of Governors of the Agency may amend the network by adding or deleting stations in the annexed Table 3, which is not an integral part of the Treaty.

Article 19. The International Data Centre shall routinely receive all seismological data contributed to the international exchange by its participants process and distribute these data to all participants within two days, store all data contributed by participants as well as the results of the processing at the Centre. The procedures to be used at the Centre are laid down in the Operational Manual for International Exchange of Seismological Data. The Centre shall further coordinate requests for additional seismological data from one State Party to another Party and make such data available to all States Parties

Article 20. Each State Party is encouraged to assist in the assessment of the nature of the seismic events located by the International Data Centre by contributing any additional information available about events located in its own territory.

Article 21. The Agency shall, in cooperation with the States Parties establish and operate a specified network of high quality stations to measure radio-nuclides in the atmosphere. This network consists initially of the stations specified in Table 4, annexed to this Protocol. These stations shall fulfil the technical and operational requirements summarised in Table 5 and further specified in the Operational Manual for International Exchange of Data on Radionuclides in the Atmosphere.

Article 22. The Agency shall control the quality of the network of stations to measure radionuclides in the atmosphere and evaluate its overall performance. The Board of Governors of the Agency may decide to amend the network by adding or deleting stations in the annexed Table 4, which is not an integral part of the Treaty.

Article 23. The Agency shall make the necessary legal and other arrangements with the States Parties to establish and operate one or several stations on its territory to measure radioactivity in the atmosphere. For an existing facility a State Party shall give the Agency authority to use the station as a station to measure radionuclides in the atmosphere as specified in the Operational Manual for International Exchange of Data on Radionuclides in the Atmosphere and to make necessary changes in the equipment and the operational procedures to meet these requirements. A State Party shall cooperate with the Agency to establish a new station at a site to be agreed upon. The State Party shall provide the required land for the station free of charge and cooperate with the Agency in establishing the station and the infrastructure needed to support it. A State Party shall also transfer authority to operate the station or stations to the Agency and cooperate with the Agency in the routine operation.

Article 24. In addition to routinely submitted measurements, each State Party may provide any other relevant measurement on radionuclides in the atmosphere. Each State Party may also request additional data from a third party through the Agency. The procedures for making such requests are laid down in the Operational Manual for International Exchange of Data on Radionuclides in the Atmosphere.

Article 25. The International Data Centre shall receive all measurements on radionuclides in the atmosphere contributed to the

international exchange by its participants and routinely process these measurements according to established procedures. The Centre shall, at the request by a State Party, evaluate an observed release of radionuclides in the atmosphere as well as the time and location of the source. In this analysis, relevant wind trajectories obtained from meteorological data shall be used. The results of the analysis shall be distributed to all participants within one week, and the records thereof be kept at the Centre. The procedures to be used in the analysis at the Centre are laid down in the Operational Manual for International Exchange of Data on Radionuclides in the Atmosphere. The Centre shall also coordinate requests for additional measurements from one State Party to another and circulate the Information obtained as a result of such requests.

Article 26. The Agency shall, in cooperation with the States Parties, establish and operate a specified network of high-quality hydroacoustic stations. This network consists initially of the stations specified in Table 6, annexed to this Protocol. These stations shall fulfil the technical and operational requirements summarised in Table 7 and further specified in the Operational Manual for International Exchange of Hydroacoustic Data. Uninterrupted data from the stations shall be transmitted on-line to the International Data Centre.

Article 27. The Agency shall control the quality of the hydroacoustic stations and evaluate their overall performance. The Board of Governors of the Agency may decide to amend the network by adding or deleting stations in the annexed table 6, which is not an integral part of the Treaty.

Article 28. A State Party shall, at the Agency's request, cooperate with the Agency in establishing and operating one or several hydroacoustic stations on its territory. For an existing facility, a State Party shall give the Agency authority to use the station as an hydroacoustic station as specified in the Operational Manual for International Exchange of Hydroacoustic Data and to make necessary changes in the equipment and the operational procedures to meet these requirements. A State Party shall cooperate with the Agency to establish a new station at a site to be agreed upon. The State Party shall provide the required land for the station free of charge and cooperate with the Agency in establishing the station and the infrastructure needed to support it. A State Party shall also transfer authority to operate the station or stations to the Agency and cooperate with the Agency in the routine operation.

Article 29. The International Data Centre shall routinely receive data from hydroacoustic stations, process and distribute these data to all participants within two days, and store all data contributed by participants as well as the results of the processing at the Centre. The procedures to be used at the Centre are laid down in the Operational Manual for International Exchange of Hydro acoustic Data.

Article 30. Each State Party undertakes to make satellite image data available on terms to be agreed by the Agency. The Agency shall, upon request, assist States Parties in the processing of satellite image data to facilitate the interpretation of events relevant to this Treaty. The procedures to be used by the Agency are laid down in the Operational Manual for Satellite Data Processing.

Article 31. The Agency shall facilitate cooperation among States Parties in using additional means of verification which any State Party may find useful. The Agency shall receive, compile and circulate any data relevant to the verification of this Treaty which any State Party makes available.

Article 32. The Agency shall, in consultation with the States Parties, provide technical support to establish, operate and maintain such additional means of verification.

Article 33. Additional means of verification of compliance with this Treaty may include acoustic and ionospheric measurements in the atmosphere,

Section IV: Procedures for On-site Inspections and Monitoring

Part 1: Procedures for On-Site Inspections

Article 34. The basic rules for verification through on-site inspection are laid down in Article IV of this Treaty.

Article 35. The purpose of an international on-site inspection is to verify compliance with the Treaty. A team of inspectors (hereinafter referred to as the Inspection Team) shall be dispatched by the Agency and shall present a report to the Board of Governors of the Agency on the observations made during the inspection.

Article 36. The Inspection Team shall begin its inspection in the specified area to be inspected not later than seven days after the Board of Governors of the Agency has decided to conduct an inspection. This area must be continuous and not exceed 1,000 km² or a distance of 50 km in any direction. An inspection shall normally not exceed seven days after

the arrival of the Inspec-Team at the site in the territory of the State Party to be inspected.

Article 37. In accordance with the Agency's basic rights to use its own communication systems and means of transport and to take samples and to airing such samples out of the inspected country, the Inspection Team shall, during an international on-site inspection, be entitled to

- conduct visual inspections of the area from the air and on the ground;
- take photographs in the visual and infrared parts of the spectrum from the air and on the ground;
- measure radiation and levels of radioactivity in the atmosphere above the area, at ground level and in water;
- conduct temporary seismological measurements in the area.

Article 38. The Director-General of the Agency shall notify the inspected State Party not less than 12 hours prior to the planned arrival of the inspection Team at the point of entry as defined in the Manual.

Article 39. An international on-site inspection shall be carried out by the personnel and experts of the Agency. The rules and detailed procedures for such on-site inspections are laid down in the Manual for International On-Site Inspections.

At all times while the inspecting personnel are in the territory of the State Party to be inspected, their persons, property, personal baggage, archives and documents as well as their temporary official and living quarters shall be accorded the same privileges and immunities as provided in the Vienna Convention on Diplomatic Relations to the persons, property, personal baggage, archives and documents of diplomatic agents as well as to the premises of diplomatic missions and private residences of diplomatic agents.

Without prejudice to their privileges and immunities, it shall be the duty of the inspecting personnel to respect the laws and regulations of the State in the territory of which the inspection is to be carried out, as long as such laws and regulations are not in conflict with the proper exercise of the rights and functions provided for by the Treaty and this Protocol.

Part 2: Procedures for On-site Monitoring of Non-Nuclear Explosions

Article 40. For an explosion with a yield exceeding 500 tons TNT equivalent or any group of explosions with an aggregate yield exceeding

the same limit, the State Party conducting such an explosion shall notify the Agency not later than 15 days prior to the event. This notification shall include

- the time, location, purpose and yield of the explosion;
- a full description of the event, including a timetable for loading the charge;
- any other relevant information that a State Party wishes to submit.

Article 41. A State Party conducting an explosion with a yield exceeding 100 tons but not exceeding 500 tons TNT equivalent shall provide the Agency with information on such an event not later than seven days after the explosion.

Article 42. Personnel from the Agency shall monitor on site the preparations for, and the detonation of, any non-nuclear explosion with a yield exceeding 500 tons of TNT equivalent.

Based on the information provided by the State Party conducting the explosion, the Director-General of the Agency shall decide from what date observers shall follow the preparation work. The on-site observation shall include the conduct of the explosion and observation of its result. The detailed rules and procedures are laid down in the Operational Manual for On-Site Monitoring of Non-Nuclear Explosions.

Article 43. A State Party which regularly conducts explosions with yields exceeding 100 tons TNT equivalent within a limited area, e.g. a mine, might establish a declared site for non-nuclear explosions. In the declaration the State Party shall submit to the Agency a description of the planned explosive activities, the purpose of the explosions and of the site itself. A declared site shall be open to on-site observation by the Agency at any time and the Agency might place on-site recording equipment at the site as defined in the Operation Manual for On-Site Monitoring. For explosions at declared sites a State Party is not obliged to provide information prior to or after an explosion as specified in articles 40 and 41.

Article 44. The personnel conducting the on-site monitoring shall be allowed to follow the preparation of the explosion, including the loading of the charge or charges. They should further be allowed to take pictures and to make measurements of radiation and levels of radioactivity in the air and in water in the vicinity of the event, prior to and after the explosion.

Article 45. The Agency shall establish a factual report of each non-nuclear explosion monitored and submit the report to all States Parties and to the Board of Governors of the Agency.

Article 46. On-site monitoring of a non-nuclear explosion shall be carried out by personnel and experts of the Agency. The rules and detailed procedures for such on-site monitoring are laid down in the Manual for On-Site Observations of Non-Nuclear Explosions.

At all times while the monitoring personnel are present in the territory of the State Party to be inspected or in a territory under the jurisdiction or control of that State party, their persons, property, personal baggage, archives and documents as well as their temporary official and living quarters shall be accorded the same privileges and immunities as provided in the Vienna Convention on Diplomatic Relations to the persons, property, personal baggage, archives and documents of diplomatic agents as well as to the premises of diplomatic missions and private residences of diplomatic agents.

Without prejudice to their privileges and immunities, it shall be the duty of the monitoring personnel to respect the laws and regulations of the State in whose territory the inspection is to be carried out, as long as such laws and regulations are not in conflict with the proper exercising of the rights and functions provided for by the Treaty and this Protocol

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CONFERENCE ON DISARMAMENT: COMPREHENSIVE NUCLEAR TEST BAN TREATY MODEL TREATY TEXT

PREAMBLE

1. The States Parties to this Treaty (hereinafter referred to as “the States Parties”),
2. Stressing the need for systematic and progressive efforts to reduce nuclear weapons globally, with the ultimate goal of eliminating those weapons, and of general and complete disarmament under strict and effective international control,
3. Convinced that the present international situation provides an opportunity to take further effective measures towards nuclear disarmament and against the proliferation of nuclear weapons in all its aspects, and declaring their intention to take such measures,
4. Welcoming the international agreements and other positive measures of recent years in the field of nuclear disarmament, including further reductions in arsenals of nuclear weapons, as well as in the field of the prevention of nuclear proliferation in all its aspects,
5. Underlining the importance of the full and prompt implementation of such agreements and measures,
6. Convinced that the most effective way to achieve an end to nuclear testing is through the conclusion of a universal and internationally and effectively verifiable comprehensive nuclear-test-ban treaty that will attract the adherence of all States and will contribute to the prevention of the proliferation of nuclear

weapons in all its aspects, to the process of nuclear disarmament and therefore to the enhancement of international peace and security,

7. Convinced also that the conclusion of a universal and internationally and effectively verifiable comprehensive nuclear-test-ban treaty will constitute a meaningful step towards the realisation of a systematic process to achieve nuclear disarmament,
8. Noting the aspirations expressed by the Parties to the 1963 Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water to seek to achieve the discontinuance of all test explosions of nuclear weapons for all time, which are recalled in the Preamble to the 1968 Treaty on the Non-Proliferation of Nuclear Weapons,
9. Deeply convinced that, to contribute to the prevention of the proliferation of nuclear weapons in all its aspects, to the process of nuclear disarmament and therefore to the enhancement of international peace and security, this Treaty should be universal, and urging all States to participate therein,
10. Affirming that this Treaty seeks to achieve the discontinuance of all nuclear weapon test explosions and all other nuclear explosions,

Article I: Scope

1. Each State Party undertakes not to carry out any nuclear weapon test explosion or any other nuclear explosion, and to prohibit and prevent any such nuclear explosion at any place under its jurisdiction or control.

2. Each State Party 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.

Article II: National Implementation Measures

1. Each State Party shall, in accordance with its constitutional processes, take any necessary measures to implement its obligations under this Treaty. In particular, it shall take any necessary measures:

- (a) To prohibit natural and legal persons anywhere on its territory or in any other place under its jurisdiction as recognised by international law from undertaking any activity prohibited to a State Party under this Treaty;

- (b) To prohibit natural and legal persons from undertaking any such activity anywhere under its control; and
- (c) To prohibit, in conformity with international law, natural persons possessing its nationality from undertaking any such activity anywhere.

2. Each State Party shall co-operate with other States Parties and afford the appropriate form of legal assistance to facilitate the implementation of the obligations under paragraph 1 of this Article.

3. Each State Party shall inform the Organisation of the measures taken pursuant to this Article.

4. In order to fulfil its obligations under the Treaty, each State Party shall designate or set up a National Authority and shall so inform the Organisation upon entry into force of the Treaty for such a State Party. The National Authority shall serve as the national focal point for liaison with the Organisation and with other States Parties.

Article III: The Organisation

A. General Provisions

1. The States Parties to this Treaty hereby establish the Comprehensive Nuclear Test-Ban Treaty Organisation (hereinafter referred to as "the Organisation") to achieve the object and purpose of this Treaty, to ensure the implementation of its provisions, including those for international verification of compliance with it, and to provide a forum for consultation and cooperation among States Parties.

2. All States Parties to this Treaty shall be members of the Organisation. A State Party shall not be deprived of its membership in the Organisation.

3. The seat of the Organisation shall be in Vienna.

4. There are hereby established as organs of the Organisation the Conference of the States Parties, the Executive Council and the Technical Secretariat which shall include the International Data Centre. Subsidiary bodies may be established within the Organisation according to the provisions of this Treaty. These organs shall have the exclusive responsibility for the exercise of the functions of the Organisation as specified in paragraph 1 of this Article.

5. Each State Party undertakes to co-operate with the Organisation in the exercise of its functions in accordance with this Treaty.

6. The Organisation shall conduct its verification activities provided for under this Treaty in the least intrusive manner possible consistent

with the timely, effective and efficient accomplishment of their objectives. It shall request only the information and data necessary to fulfil its responsibilities under this Treaty. It shall take every precaution to protect the confidentiality of information on civil and military activities and facilities coming to its knowledge in the implementation of this Treaty.

7. Each State Party shall treat as confidential and afford special handling to information and data that it receives in confidence from the Organisation in connection with the implementation of this Treaty. It shall treat such information and data exclusively in connection with its rights and obligations under this Treaty.

8. The Organisation, as an independent body, shall seek to utilize existing relevant expertise and facilities, as appropriate, and to maximize cost efficiencies through cooperation with other international organisations, in particular the International Atomic Energy Agency. Such arrangements (excluding those of a minor and normal commercial and contractual nature) are to be set out in agreements, which are to be submitted to the Conference of the States Parties for approval.

9. The costs of the Organisation's activities shall be paid by the States Parties in accordance with the United Nations scale of assessments adjusted to take into account differences in membership between the United Nations and this Organisation. A State Party shall have the right to fulfil its assessment obligation by direct payment to the Organisation or by a combination of direct payment and contribution credit, as provided for in paragraphs 11 and 12 of this Article. The assessment obligation of each State Party shall be fulfilled on an annual basis.

10. Financial contributions of States Parties to the Preparatory Commission shall be deducted in an appropriate way from their contributions to the regular budget. Each State Party that did not contribute to the Preparatory Commission in accordance with the United Nations scale of assessments, adjusted to take into account differences in membership between the United Nations and the Organisation, shall have its contribution to the annual budget adjusted to cover the amount that such State Party would have been expected to contribute to the Preparatory Commission. In determining the amount of such an adjustment, that State Party shall be considered to have been a member of the Preparatory Commission *ab initio*. After such adjustments have been made, the contributions of States Parties that contributed to the Preparatory Commission shall be adjusted in an appropriate way in

the regular budget. The budget of the Organisation shall comprise two separate chapters, one relating to administrative and other costs, and one relating to verification costs.

11. The contribution credit that may be taken by a State Party towards its annual assessment shall be limited to the credit value of activities undertaken by that State Party in the establishment or upgrading of the infrastructure of the International Monitoring System (IMS). In accordance with paragraph 52 of this Article, the Director-General shall determine the credit value, if any, of these activities within the context of the Organisation's budget. A State Party that intends to fulfil a proportion of its assessment obligation by a contribution credit, or intends to terminate the activities for which a contribution credit was envisaged, shall notify the Technical Secretariat not less than one year in advance of the commencement or termination of such activities. If the Director-General determines that a State Party has delayed, deferred or terminated the implementation of bilateral commitments with respect to IMS facilities, that State Party shall not be entitled to a contribution credit during that year in relation to those activities.

12. The contribution credit of a State Party may not exceed... per cent of the annual assessment obligation of that State Party in any single year, but may be recovered in full over successive years. A State Party may share a contribution credit with another State Party by agreement between themselves and with the concurrence of the Director-General. A State Party may only fulfil a proportion of its assessment obligation by a contribution credit for the following purposes:

- (a) Costs of establishing or upgrading IMS facilities located on the territory of States Parties;
- (b) Costs of establishing or upgrading IMS facilities not located on the territory of any State or located on the territory of a State not Party to this Treaty.

13. A member of the Organisation which is in arrears in the payment of its assessed contribution to the Organisation shall have no vote in the Organisation if the amount of its arrears equals or exceeds the amount of the contribution due from it for the preceding two full years. The Conference of the States Parties may, nevertheless, permit such a member to vote if it is satisfied that the failure to pay is due to conditions beyond the control of the member.

11. The contribution credit that may be taken by a State Party towards its annual assessment shall be limited to the credit value of activities undertaken by that State Party in the establishment or upgrading of the infrastructure of the International Monitoring System (IMS). In accordance with paragraph 52 of this Article, the Director-General shall determine the credit value, if any, of these activities within the context of the Organisation's budget. A State Party that intends to fulfil a proportion of its assessment obligation by a contribution credit, or intends to terminate the activities for which a contribution credit was envisaged, shall notify the Technical Secretariat not less than one year in advance of the commencement or termination of such activities. If the Director-General determines that a State Party has delayed, deferred or terminated the implementation of bilateral commitments with respect to IMS facilities, that State Party shall not be entitled to a contribution credit during that year in relation to those activities.

12. The contribution credit of a State Party may not exceed... percent of the annual assessment obligation of that State Party in any single year, but may be recovered in full over successive years. A State Party may share a contribution credit with another State Party by agreement between themselves and with the concurrence of the Director-General. A State Party may only fulfil a proportion of its assessment obligation by a contribution credit for the following purposes:

- (a) Costs of establishing or upgrading IMS facilities located on the territory of States Parties;
- (b) Costs of establishing or upgrading IMS facilities not located on the territory of any State or located on the territory of a State not Party to this Treaty.

13. A member of the Organisation which is in arrears in the payment of its assessed contribution to the Organisation shall have no vote in the Organisation if the amount of its arrears equals or exceeds the amount of the contribution due from it for the preceding two full years. The Conference of the States Parties may, nevertheless, permit such a member to vote if it is satisfied that the failure to pay is due to conditions beyond the control of the member.

B. The Conference of the States Parties

Composition, procedures and decision-making

14. The Conference of the States Parties (hereinafter referred to as "the Conference") shall be composed of all States Parties to this Treaty.

Each State Party shall have one representative in the Conference who may be accompanied by alternates and advisers.

15. The first session of the Conference shall be convened by the Depositary not later than 30 days after the entry into force of this Treaty.

16. The Conference shall meet in regular sessions which shall be held annually, unless it decides otherwise.

17. A special session of the Conference shall be convened:

- (a) When decided by the Conference;
- (b) When requested by the Executive Council; or
- (c) When requested by any State Party and supported by two-thirds of the States Parties.

The special session shall be convened not later than 30 days after the decision of the Conference, the request of the Executive Council, or the attainment of the necessary support, unless specified otherwise in the decision or request.

18. The Conference may also be convened in the form of an Amendment Conference, in accordance with Article IX of this Treaty.

19. The Conference may also be convened in the form of a Review Conference, in accordance with Article VIII of this Treaty.

20. Sessions shall take place at the Headquarters of the Organisation unless the Conference decides otherwise.

21. The Conference shall adopt its rules of procedure. At the beginning of each session, it shall elect its President and such other officers as may be required. They shall hold office until a new President and other officers are elected at the next session.

22. A simple majority of the States Parties shall constitute a quorum.

23. Each State Party shall have one vote.

24. The Conference shall take decisions on matters of procedure by a simple majority of the members present and voting. Decisions on matters of substance shall be taken as far as possible by consensus. If consensus is not attainable, when an issue comes up for decision, the President of the Conference shall defer any vote for 24 hours and during this period of deferment shall make every effort to facilitate achievement of consensus, and shall report to the Conference before the end of this period. If consensus is not possible at the end of 24 hours, the Conference shall take a decision by a two-thirds majority of

members present and voting unless specified otherwise in this Treaty. When the issue arises as to whether the question is one of substance or not, that question shall be treated as a matter of substance unless otherwise decided by the majority required for decisions on matters of substance.

25. The Conference shall establish such subsidiary organs as it finds necessary for the exercise of its functions in accordance with this Treaty.

Powers and Functions

26. The Conference shall be the principal organ of the Organisation. It shall consider any questions, matters or issues within the scope of this Treaty, including those relating to the powers and functions of the Executive Council and the Technical Secretariat, in accordance with this Treaty. It may make recommendations and take decisions on any questions, matters or issues within the scope of this Treaty raised by a State Party or brought to its attention by the Executive Council.

27. The Conference shall oversee the implementation of, and review compliance with, this Treaty and act in order to promote its object and purpose. It shall also oversee the activities of the Executive Council and the Technical Secretariat and may issue guidelines to either of them for the exercise of their functions.

28. The Conference shall:

- (a) consider and adopt the report of the Organisation on the implementation of this Treaty and the annual programme and budget of the Organisation, submitted by the Executive Council, as well as consider other reports;
- (b) decide on the scale of financial contributions to be paid by States Parties in accordance with paragraph 9 of this Article;
- (c) appoint the members of the Executive Council, designated in accordance with paragraphs 29 and 30 of this Article;
- (d) appoint the Director-General of the Technical Secretariat (hereinafter referred to as "the Director-General");
- (e) consider and approve the rules of procedure of the Executive Council submitted by the latter;
- (f) establish such subsidiary organs as it finds necessary for the exercise of its functions in accordance with this Treaty;
- (g) consider and review scientific and technological developments that could affect the operation of this Treaty;

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- (h) take the necessary measures to ensure compliance with this Treaty and to redress and remedy any situation that contravenes the provisions of this Treaty, in accordance with Article VI of this Treaty;
 - (i) consider and approve at its first session any draft agreements, provisions, procedures, Operational Manuals, guidelines and any other documents, including a report on the operational status of the Treaty's verification regime, developed and recommended by the Preparatory Commission;
 - (j) consider and approve any new Operational Manuals and any changes to the existing Operational Manuals which may be proposed by the Technical Secretariat;
 - (k) consider and approve agreements or arrangements with States and international organisations to be concluded by the Executive Council on behalf of the Organisation in accordance with paragraph 40(h) of this Article.

C. The Executive Council

Composition, procedures and decision-making

29. The Executive Council shall consist of 41 members. Each State Party shall have the right, in accordance with the principle of rotation, to serve on the Executive Council. The members of the Executive Council shall be designated by the States Parties of each region. In order to ensure the effective functioning of this Treaty, due regard being specially paid to equitable geographical distribution, to the factors set forth in paragraph 30 of this Article, and to political and security interests, the Executive Council shall be composed as follows:

- (a) Nine States Parties from Africa to be designated by States Parties located in this region. As a basis for this designation, it is understood that, out of these nine States Parties, two members shall be designated in accordance with the rotational design provided for in sub-paragraph (g) of this paragraph.
- (b) Nine States Parties from Asia to be designated by States Parties located in this region. As a basis for this designation, it is understood that, out of these nine States Parties, two members shall be designated in accordance with the rotational design provided for in sub-paragraph (g) of this paragraph.
- (c) Five States Parties from Eastern Europe to be designated by States Parties located in this region. As a basis for this designation, it is understood that, out of these five States Parties,

one member shall be designated in accordance with the rotational design provided for in sub-paragraph (g) of this paragraph.

- (d) Seven States Parties from Latin America and the Caribbean to be designated by States Parties located in this region. As a basis for this designation, it is understood that, out of these seven States Parties, one member shall be designated in accordance with the rotational design provided for in sub-paragraph (g) of this paragraph.
- (e) Ten States Parties from Western Europe and Other States to be designated by States Parties located in this region. As a basis for this designation, it is understood that, out of these ten States Parties, two members shall be designated in accordance with the rotational design provided for in sub-paragraph (g) of this paragraph.
- (f) One further State Party to be designated consecutively by States Parties located in the regions of Asia and Latin America and the Caribbean. As a basis for this designation it is understood that this State Party shall be a rotating member from these regions.
- (g) The rotational designation referred to in each of sub-paragraphs (a) to (e) of this paragraph shall be done by an alphabetical order of the State Parties in each region, with the exclusion of States Parties designated other than by rotation.
- (h) A State Party which prefers not to be designated to the Executive Council, and which would otherwise be designated as a member in accordance with the rotational design provided for in sub-paragraphs (a) to (g) of this paragraph, will submit to the Director-General a letter of renunciation. In such a case, the next State Party in the alphabetical order of States Parties in the region shall be designated, unless it also submits a letter of renunciation upon
- (i) At two year intervals after entry into force of this Treaty, the Conference may, upon the request of a majority of States Parties, review the composition of the Executive Council taking into account developments related to the factors specified in the chapeau to this paragraph, and in paragraph 30 of this Article, that govern the Executive Council's composition.

30. In designating Executive Council members, other than by rotation, in accordance with paragraph 29 of this Article, States Parties shall accord particular priority to:

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- (a) those States Parties which have on their territories the highest number of IMS stations;
 - (b) those States Parties which have, have ever had, or have under construction nuclear power or nuclear research reactors, as determined by data published by the International Atomic Energy Agency; and
 - (c) those States Parties which ratify this Treaty prior to its entry into force.

31. The members of the Executive Council shall be designated and appointed at the first meeting of the Conference, and thereafter at regular annual sessions of the Conference.

32. Each member of the Executive Council shall hold office from the end of the session of the Conference at which that member is appointed until the end of the second regular annual session of the Conference thereafter. At the first session of the Conference, however, 20 members shall be appointed to hold office until the end of the third regular annual session of the Conference, due regard being paid to the established numerical proportions as described in paragraph 29 of this Article.

33. Each member of the Executive Council shall have one representative in the Executive Council, who may be accompanied by alternates and advisors.

34. The Executive Council shall elaborate its rules of procedure and submit them to the Conference for approval.

35. The Executive Council shall elect its Chairman from among its members.

36. The Executive Council shall meet for regular sessions. Between regular sessions it shall meet as may be required for the fulfilment of its powers and functions.

37. A two-thirds majority of members of the Executive Council shall constitute a quorum.

38. Each member of the Executive Council shall have one vote. Unless otherwise specified in this Treaty, the Executive Council shall take decisions on matters of substance by a two-thirds majority of the members present and voting. The Executive Council shall take decisions on matters of procedure by a simple majority of the members present and voting. When the issue arises as to whether the question is one of substance or not, that question shall be treated as a matter of substance

unless otherwise decided by the majority required for decisions on matters of substance.

Powers and Functions

39. The Executive Council shall be the executive organ of the Organisation. It shall be responsible to the Conference. It shall carry out the powers and functions entrusted to it in accordance with this Treaty. In so doing, it shall act in conformity with the recommendations, decisions and guidelines of the Conference and ensure their continuous and proper implementation.

40. The Executive Council shall:

- (a) promote effective implementation of, and compliance with, this Treaty;
- (b) supervise the activities of the Technical Secretariat;
- (c) make recommendations as necessary to the Conference for consideration of further proposals for promoting the object and purpose of this Treaty;
- (d) co-operate with the National Authority of each State Party;
- (e) consider and submit to the Conference the draft annual programme and budget of the Organisation, the draft report of the Organisation on the implementation of this Treaty, the report on the performance of its own activities and such other reports as it deems necessary or which the Conference may request;
- (f) make arrangements for the sessions of the Conference, including the preparation of the draft agenda;
- (g) examine proposals for changes, on matters of an administrative or technical nature, to the Protocol, pursuant to Article IX of this Treaty, and make recommendations to the States Parties regarding their adoption;
- (h) conclude, subject to prior approval of the Conference, the agreements or arrangements with States and international organisations on behalf of the Organisation and supervise their implementation, with the exception of agreements or arrangements referred to in sub-paragraph (i) below;
- (i) approve and supervise the operation of the agreements or arrangements relating to the implementation of the verification activities negotiated with States Parties by the Technical Secretariat in accordance with paragraph 45(h) of this Article.

41. The Executive Council may request a special session of the Conference.

42. The Executive Council shall:

- (a) facilitate co-operation among States Parties and the Technical Secretariat, including co-operation with the aim to resolve ambiguous events, through information exchanges and further co-operation;
- (b) facilitate consultation and clarification among States Parties in accordance with Article V and the Protocol to this Treaty;
- (c) receive, consider and take decisions on requests for, and reports on, on-site inspections, in accordance with Article V and the Protocol to this Treaty.

43. The Executive Council shall consider concerns raised by a State Party regarding compliance and cases of non-compliance with the provisions of this Treaty and its Protocol. In doing so, the Executive Council shall consult with the States Parties involved and, as appropriate, request a State Party to take measures to redress the situation within a specified time. To the extent that the Executive Council considers further action to be necessary, it shall take, *inter alia*, one or more of the following measures:

- (a) Notify all States Parties of the issue or matter;
- (b) Bring the issue or matter to the attention of the Conference;
- (c) Make recommendations to the Conference, in accordance with paragraph 3 of Article VI of this Treaty.
- (d) Take action in accordance with paragraph 4 of Article VI of this Treaty.

D. The Technical Secretariat

44. The Technical Secretariat shall assist States Parties in the implementation of this Treaty. The Technical Secretariat shall assist the Conference and the Executive Council in the performance of their functions. The Technical Secretariat shall carry out the verification measures provided for in this Treaty. It shall carry out the other functions entrusted to it by this Treaty, as well as those functions delegated to it by the Conference or the Executive Council in accordance with this Treaty. The Technical Secretariat shall include, as an integral part, the International Data Centre.

45. The functions of the Technical Secretariat with regard to verification of compliance with this Treaty shall include:

- (a) supervising, coordinating and ensuring the operation of the International Monitoring System and its component elements, and of the International Data Centre, in accordance with Article V and the Protocol to this Treaty;
 - (b) routinely processing, analysing and reporting on verification regime data according to agreed procedures, in accordance with Article V and the Protocol to this Treaty;
 - (c) co-ordinating international cooperative arrangements to receive, process and facilitate an exchange of data obtained through the International Monitoring System;
 - (d) providing technical assistance in, and support for, the installation and operation of monitoring stations in accordance with Article V and the Protocol to this Treaty;
 - (e) assisting the Executive Council in facilitating consultation and clarification among States Parties in accordance with Article V and the Protocol to this Treaty;
 - (g) receiving requests for on-site inspections, processing such requests, making preparations for on-site inspections in accordance with Article V and the Protocol to this Treaty;
 - (h) negotiating and concluding agreements or arrangements relating to verification activities with States Parties, other States or international organisations as appropriate, subject to approval by the Executive Council;
 - (i) assisting the States Parties through their National Authorities on other issues of verification under this Treaty.
46. The functions of the Technical Secretariat with respect to administrative matters shall include:
- (a) preparing and submitting to the Executive Council the draft programme and budget of the Organisation;
 - (b) preparing and submitting to the Executive Council the draft report of the Organisation on the implementation of this Treaty and such other reports as the Conference or the Executive Council may request;
 - (c) providing administrative and technical support to the Conference, the Executive Council and other subsidiary organs;
 - (d) addressing and receiving communications on behalf of the Organisation relating to the implementation of this Treaty.

47. With respect to the responsibilities of the Technical Secretariat for preparing and submitting to the Executive Council the draft programme and budget of the Organisation, the Technical Secretariat shall determine and maintain a clear accounting of all costs for each facility established as part of the International Monitoring System. Similar treatment in the draft programme and budget shall be accorded to all other activities of the Organisation.

48. The Technical Secretariat shall promptly inform the Executive Council of any problems that have arisen with regard to the discharge of its functions that have come to its notice in the performance of its activities and that it has been unable to resolve through consultations with the State Party concerned.

49. The Technical Secretariat shall develop Operational Manuals to guide the operation of the various components of the verification system, in accordance with Article V and the Protocol to this Treaty, for submission to the Conference for its approval. These Manuals shall not constitute integral parts of this Treaty or its Protocol. The Technical Secretariat may update or make other changes to the Operational Manuals, subject to approval by the Conference. The Technical Secretariat shall promptly inform the States Parties of these changes.

50. The Technical Secretariat shall comprise a Director-General, who shall be its head and chief administrative officer, and such scientific, technical and other personnel as may be required. The Director-General shall be appointed by the Conference upon the recommendation of the Executive Council for a term of four years, renewable for one further term, but not thereafter.

51. The Director-General shall be responsible to the Conference and the Executive Council for the appointment of the staff and for the organisation and functioning of the Technical Secretariat. The paramount consideration in the employment of the staff and in the determination of the conditions of service shall be the necessity of securing the highest standards of professional expertise, experience, efficiency, competence and integrity. Only citizens of States Parties shall serve as the Director-General, as inspectors or as members of the professional and clerical staff. In the recruitment of staff due regard shall be paid to the principle of equitable geographic distribution. Recruitment shall be guided by the principle that the staff shall be kept to the minimum necessary for the efficient and effective discharge of the responsibilities of the Technical Secretariat.

52. After the Technical Secretariat has received the advance notification by a State Party of its intention to fulfil part of its assessment obligation by a contribution credit in accordance with paragraphs 11 and 12 of this Article, the Director-General, in consultation with the appropriate State Party or States Parties, shall make a determination of the credit value of the activity to be undertaken in the establishment or upgrading of the infrastructure of the IMS. This credit value shall not exceed the amount the Organisation has budgeted for that particular activity.

53. The Director-General may, as appropriate, after consultation with the Executive Council, establish temporary working groups of scientific experts to provide recommendations on specific issues. In regard to the above, States Parties may submit lists of experts to the Director-General.

54. In the performance of their duties, the Director-General, the inspectors and the members of the staff shall not seek or receive instructions from any Government or from any other source external to the Organisation. They shall refrain from any action that might reflect adversely on their positions as international officers responsible only to the Organisation.

55. Each State Party shall respect the exclusively international character of the responsibilities of the Director-General, the inspectors and the members of the staff and shall not seek to influence them in the discharge of their responsibilities.

Article IV: Privileges and Immunities

1. The Organisation shall enjoy on the territory and in any other place under the jurisdiction or control of a State Party such legal capacity and such privileges and immunities as are necessary for the exercise of its functions.

2. Delegates of States Parties, together with their alternates and advisers, representatives appointed to the Executive Council, together with their alternates and advisers, the Director-General and the staff of the Organisation shall enjoy such privileges and immunities as are necessary in the independent exercise of their functions in connection with the Organisation.

3. The legal capacity, privileges and immunities referred to in this Article shall be defined in agreements between the Organisation and the States Parties as well as in an agreement between the Organisation

and the State in which the headquarters of the Organisation is seated. Such agreements shall be considered and approved in accordance with Article III.

4. Notwithstanding paragraphs 1 and 2, the privileges and immunities enjoyed by the Director-General and the staff of the Technical Secretariat during the conduct of verification activities shall be those set forth in the Protocol to this Treaty.

Article V: Verification

General Provisions

1. In order to ensure verification of compliance with the provisions of this Treaty, a verification regime shall be established consisting of the following elements:

- (a) an International Monitoring System;
- (b) consultation and clarification;
- (c) on-site inspections; and,
- (d) associated measures, including the international exchange of other relevant information.

The verification regime shall be operational upon the entry into force of this Treaty, and shall be supported by the Technical Secretariat.

2. The goal of the Treaty's verification regime shall be to permit the detection in a timely manner, and accurate location of any nuclear weapon test explosion or any other nuclear explosion as prohibited under the Treaty, and to provide the basis for States Parties to ensure compliance with the provisions of the Treaty and to redress and remedy any situation which contravenes the provisions of the Treaty, in accordance with Article VI. The verification regime should possess the technical capacity required to collect relevant data to meet this goal.

3. Verification activities shall be carried out on the basis of full respect for the sovereignty of States Parties, and in the least intrusive manner possible consistent with the effective and timely accomplishment of their objectives. Each State Party shall refrain from any abuse of the right of verification.

4. Each State Party undertakes in accordance with the Treaty to cooperate, through its National Authority established pursuant to paragraph 4 of Article II, with the Organisation and with other States Parties to facilitate the verification of compliance with this Treaty *inter alia* by:

- (a) establishing the necessary facilities to participate in these verification measure and establishing the necessary communication channels;
- (b) providing data obtained by national stations which are part of the International Monitoring System;
- (c) permitting the conduct of on-site inspections and visits; and,
- (d) participating as appropriate in specified associated measures and the international exchange of other relevant information.

5. All States Parties, irrespective of their technical and financial capabilities, shall enjoy the equal right of verification and assume the equal obligation to accept verification.

6. Each State Party shall have the right to take measures to protect sensitive installations and to prevent disclosure of confidential information and data not related to this Treaty.

7. Moreover, all necessary measures consistent with the objectives of the Treaty shall be taken to protect the confidentiality of the information related to civilian and military activities and facilities obtained during verification activities.

8. Subject to the provisions of paragraphs 6 and 7, information obtained by the Organisation by means of verification measures established by this Treaty shall be made available to all States Parties in accordance with the provisions of this Article and with relevant provisions of the Protocol to this Treaty.

9. No State Party shall interpret the provisions of this Treaty as restricting the international exchange of data for scientific purposes.

10. Each State Party undertakes to co-operate with the Organisation and with other States Parties in the improvement of the verification regime, and in the examination of the verification potential of additional technologies, with a view to developing, when appropriate, specific measures to enhance the efficient and cost-effective verification of the Treaty. Such measures shall, when agreed, be incorporated in existing provisions in the Treaty, the Protocol annexed to the Treaty or as additional Sections of the Protocol, in accordance with Article DC of the Treaty, or be reflected in the Operational Manuals in accordance with paragraph 49 of Article III.

11. The provisions of the Treaty shall be implemented in a manner which avoids hampering the economic and technological development of the States Parties for further development of the application of atomic

energy for peaceful purposes. The States Parties undertake, furthermore, to promote co-operation among themselves to facilitate and participate in, the fullest possible exchange of technologies used in the verification of this Treaty in order to enable all States Parties to strengthen their national implementation of verification measures and to benefit from the application of such technologies for peaceful purposes.

Technical Secretariat

12. In discharging its responsibilities in the area of verification specified in this Treaty Protocol, in cooperation with the States Parties the Technical Secretariat shall:

- (a) make arrangements to receive and distribute data and reporting products relevant to the verification of this Treaty in accordance with its provisions, and to maintain a global communications infrastructure appropriate to this task;
- (b) routinely through its International Data Centre, which shall in principle be the focal point within the Technical Secretariat for data storage and computationally-intensive data processing;
 - (i) receive and initiate requests for data from the International Monitoring System;
 - (ii) receive data, as appropriate, resulting from the processes of consultation and clarification, from on-site inspections, and from associated measures; and,
 - (iii) receive other relevant data from States Parties and international organisation as might be contributed to the international data exchange in accordance with the Treaty and Protocol;
- (c) supervise, coordinate and ensure the operation of the International Monitoring System and its component elements, and of the International Data Centre, in accordance with the relevant Operational Manuals;
- (d) routinely process, analyse and report on verification regime data according to agreed procedures. With regard to International Monitoring System data, it shall *inter alia* with the assistance of automated and interactive data processing and analysis procedures undertaken within the International Data Centre, produce regular bulletins and other data products which permit the effective international verification of the Treaty, and early resolution of compliance concerns regarding the basic obligations

the Treaty. Such bulletins shall seek, using objective technical criteria, to associate co-processed data from the various monitoring networks with specific relevant events and to locate, assign an origin time to and characterize events capable of giving rise compliance concerns. The analytical summaries provided in such bulletins will be without prejudice to final judgements with regard to the nature of a detected event *i* with regard to non-compliance, which shall remain the responsibility of States Parties acting in accordance with Article VI.

- (e) make available all data both raw and processed, and any reporting products, to all States Parties;
- (f) provide to all States Parties timely access to all stored data, including on-line access at the expense of any State Party requesting such access;
- (g) store all data, both raw and processed, and reporting products;
- (h) coordinate and facilitate requests for additional data from the International Monitoring System;
- (i) coordinate requests for additional data from one State Party to another State Party;
- (j) provide technical assistance in, and support for, the installation and operation of monitoring facilities and respective communications means, and technical services for facilitating national analysis of verification regime data, where such assistance and support are required by the State concerned;
- (k) make available to any State Party, on its request, techniques utilised by the Technical Secretariat and its International Data Centre in compiling, storing, processing, analysing and reporting on data from the verification regime; and,
- (l) monitor and assess the overall performance of the International Monitoring System and of the International Data Centre.

13. The agreed procedures to be used by the Technical Secretariat and the International Data Centre in discharging the verification responsibilities referred to in paragraph 12 above and detailed in the Protocol shall be elaborated in the relevant Operational Manuals.

International Monitoring System

14. The International Monitoring System shall comprise monitoring facilities as specified in the Protocol and respective means of communication, and be supported by the International Data Centre of the Technical Secretariat.

15. The International Monitoring System shall be placed under the authority of the Technical Secretariat. All monitoring facilities of the International Monitoring System shall be owned and operated by the States hosting or otherwise taking responsibility for them in accordance with the Protocol.

16. Each State Party shall have the right to participate in the international exchange of data, to have access to all data made available to the International Data Centre and, at its own expense, also to arrange for on-line access to the data. Each State Party shall co-operate with the International Data Centre through its National Authority.

Changes to the International Monitoring System

17. Any measures referred to in paragraph 10 of this Article affecting the International Monitoring System by means of addition or deletion of a monitoring technology shall, when agreed, be incorporated into the Treaty and Protocol pursuant to paragraphs 1-6 of Article IX.

18. Any proposal for changes to:

- (a) numbers of facilities specified in the Protocol for a given monitoring technology; or,
- (b) other details for particular facilities as reflected in the Tables annexed to the Protocol (e.g. responsible State; location; and type of facility,)

shall be regarded as a matter of an administrative or technical nature pursuant to paragraphs 7-8 of Article IX.

19. The Director-General, in submitting to the Executive Council and States Parties information and evaluation in accordance with paragraph 8 (b) of Article DC, shall include in the case of any proposal pursuant to paragraph 18 of this Article:

- (a) technical evaluation of the proposal conducted in accordance with paragraph, 53 of Article III;
- (b) a statement on the administrative and financial impact of the proposal; and,
- (c) a report from the Director-General on consultations with States Parties whose responsibilities for hosting International Monitoring System facilities would be affected by the proposal.

Temporary Arrangements

20. In cases of significant or irretrievable breakdown of a monitoring facility contained in the Tables annexed to the Protocol, or in order to cover other temporary reductions of monitoring coverage, the Director-General shall, with the agreement of the Executive Council and in consultation with relevant States Parties, initiate stop-gap arrangements of no more than one year's duration within the parameters set out in the Protocol and within existing budgetary approvals. The Director-General shall furthermore take steps to rectify the situation and make proposals for its permanent resolution.

Co-operating national facilities

21. States Parties may also separately establish co-operative arrangements with the Organisation, in order to make available to the International Data Centre supplementary data from national monitoring stations which are not formally part of the International Monitoring System. The conditions under which data from such facilities are made available, and under which the International Data Centre might request further or expedited reporting, or clarifications, shall be elaborated in the Operational Manual for the respective monitoring network.

22. Such co-operative arrangements may be established as follows:

- (a) upon request by a State, and at that State's expense, the Technical Secretariat shall take the steps required to certify that a given monitoring facility meets the technical and operational requirements specified in the relevant Operational Manuals for an International Monitoring System facility, and make arrangements for the authentication of its data. The Technical Secretariat shall then designate such a facility as a co-operating national facility. The Technical Secretariat shall take the steps required to revalidate its certification as appropriate;
- (b) the Technical Secretariat shall maintain a current list of co-operating national facilities, and shall distribute it to all States Parties; and,
- (c) the International Data Centre shall as a rule call on data from co-operating national facilities in the same manner as from monitoring stations in the International Monitoring System's auxiliary seismic network, data transmission costs being borne by the Organisation. With the agreement of the Executive Council, the International Data Centre may receive data from

co-operating national facilities in the same manner as for other monitoring stations in the International Monitoring System networks, provided the state responsible or the station takes responsibility for all costs of data transmission to the International Data Centre. Data from co-operating national facilities shall be regarded as International Monitoring System data for the purposes of the Treaty.

Funding the International Monitoring System

23. For facilities incorporated into the International Monitoring System and specified in Tables 1-A, 2-A, 3 and 4 annexed to the Protocol, and for their functioning, to the extent that such facilities provide data to the International Data Centre in accordance with the technical requirements of the Protocol and relevant Operational Manuals, the Organisation shall pay for:

- (a) establishing any new facilities, and upgrading existing facilities, unless the State responsible for such facilities meets these costs itself;
- (b) operating and maintaining on a uniform basis International Monitoring System facilities, including facility physical security if appropriate, an application of agreed data authentication procedures;
- (c) transmitting International Monitoring System data (raw or processed, including samples where appropriate) to the International Data Centre directly from monitoring stations, from laboratory and analytical facilities or from National Data Centres; or to laboratory and analytical facilities from monitoring stations; and,
- (d) analysing samples on behalf of the Organisation.

24. For auxiliary network seismic stations specified in Table 1-B annexed to the Protocol the Organisation shall meet only the costs of:

- (a) transmitting data to the International Data Centre;
- (b) authenticating data from such stations;
- (c) upgrading stations to the required technical standard, unless the State responsible for such facilities meets these costs itself; and,
- (d) if necessary, establishing new stations for the purposes of this treaty where no appropriate facilities currently exist, unless the State responsible for such facilities meets these costs itself.

All other costs for establishing and operating any such station shall be met by the responsible State.

25. The Organisation shall also meet the cost of regular and automatic transmission to each State Party of its requested selection from the standard range of International Data Centre reporting products, as specified in Part 5 paragraph 18 of the International Monitoring System section of the Protocol. The cost of preparation and transmission of any additional data or products shall be met by the requesting State Party.

26. With the agreement of the States concerned, the Organisation may discharge its obligations under paragraphs 23 (a) and 24 (c) and (d) above through a contribution credit arrangement pursuant to paragraphs 9 and 12 of Article III.

27. The agreements concluded with States responsible for International Monitoring System facilities shall include provisions detailing the arrangements for meeting these costs.

Consultation and Clarification

28. States Parties shall consult and co-operate, directly among themselves, or through the Organisation or other appropriate international procedures, including procedures within the framework of the United Nations and in accordance with its Charter, on any matter which may be raised relating to the object and purpose, or the implementation of the provisions, of this Treaty. Results of any consultations with or through the Organisation shall be made available without delay to all States Parties, unless otherwise provided, including subject to provisions on confidentiality.

29. Without prejudice to the right of any State Party to request an on-site inspection, States Parties should as a rule make every effort to clarify and resolve, among themselves or with or through the Organisation, any ambiguous events detected by the International Monitoring System. A State Party which receives a request for clarification directly from another State Party shall provide the clarification to the requesting State Party as soon as possible, but in any case not later than 48 hours after receiving the request. The requesting and responding States Parties may keep the Executive Council and the Director-General informed of the request and the response respectively.

30. A State Party shall have the right to request the Director-General to assist in clarifying any situation relevant to this Treaty which may

be considered ambiguous or which gives rise to a concern about the possible non-compliance of another State Party with this Treaty. The Director-General shall provide appropriate information in the possession of the Technical Secretariat relevant to such a concern. The Director-General shall inform the Executive Council of the request, and the information provided in response, if so requested by the State Party concerned.

31. A State Party shall have the right to request the Executive Council to obtain clarification from another State Party on any situation which may be considered ambiguous which gives rise to a concern about its possible non-compliance with this Treaty. In such a case, the following shall apply:

- (a) The Executive Council shall forward the request for clarification to the State Party concerned through the Director-General not later than 24 hours after its receipt;
- (b) The requested State Party shall provide the clarification to the Executive Council as soon as possible, but in any case not later than 48 hours after the receipt of the request;
- (c) The Executive Council shall take note of the clarification and forward it to the requesting State Party not later than 24 hours after its receipt;
- (d) If the requesting State Party deems the clarification to be inadequate, it shall have the right to request the Executive Council to obtain from the requested State Party further clarification.

The Executive Council shall inform the States Parties without delay about any request for clarification pursuant to this paragraph.

32. If the requesting State Party considers the clarification obtained under sub-paragraph 31 (d) to be unsatisfactory, it shall have the right to request a special session of the Executive Council in which States Parties involved that are not members of the Executive Council shall be entitled to take part. In such a special session, the Executive Council shall consider the matter and may recommend any measure in accordance with Article VI to resolve the situation.

On-Site Inspections

Request for an On-Site Inspection

33. Each State Party has the right to request an on-site inspection in accordance with this Article and the Protocol to this Treaty in the

territory or in any other place under the jurisdiction or control of any State Party, or any area beyond the jurisdiction or control of State.

34. The sole purpose of an on-site inspection shall be to clarify whether a nuclear weapon test explosion or any other nuclear explosion has been carried out contrary to Article 1 of Treaty and, to the extent possible, facts relevant to the determination of responsibility for any such event.

35. An on-site inspection carried out pursuant to paragraph 33 shall be conducted as either a short phase of an on-site inspection or an extended phase of an on-site inspection in accordance with the request presented by the requesting State Party. Without prejudice to the right of a State Party to request either phase of an on-site inspection at any time, an extended phase of an on-site inspection shall as a rule be preceded by a short phase of that inspection. The term "inspection" or the phrase "on-site inspection", when used in this Treaty without reference to a phase of an on-site inspection, is understood to apply to either phase of an on-site inspection.

36. The requesting State Party is under the obligation to keep the on-site inspection request within the scope of this Treaty and to provide in the inspection request information in accordance with paragraph 38 on the basis of which a concern has arisen regarding possible non-compliance with this Treaty. The requesting State Party shall refrain from unfounded or abusive inspection requests.

Submission of an on-site inspection request

37. The requesting State Party shall present a request for an on-site inspection to the Executive Council and at the same time to the Director-General for the latter to begin immediate processing.

38. The request for an on-site inspection shall be based on the data collected by the International Monitoring System and/or by other elements of the Treaty verification regime in accordance with the provisions of this Treaty and its Protocol. The request for an on-site inspection shall contain information pursuant to paragraph 53 of the Protocol.

Follow-up after submission of an on-site inspection request

39. The Director-General shall, after receiving an on-site inspection request, acknowledge the receipt of such request to the requesting State Party within 2 hours and communicate the request to the State Party concerned within 6 hours. The Director-General shall ascertain

that the request meets the requirements specified in paragraph 53 of the Protocol, and, if necessary, assist the requesting State Party in filing the request accordingly. The Director-General shall communicate the request to all States Parties within 24 hours.

40. The Technical Secretariat shall begin preparations for a short phase of an on-site inspection immediately upon receipt of a request which meets the requirements specified in paragraph 53 of the Protocol.

41. The Director-General shall transmit immediately to the Executive Council any additional data available from the International Monitoring System or other elements of the Treaty verification regime in accordance with the provisions of this Treaty and its Protocol which is relevant to consideration of the request.

Consultation and clarification

42. The Director-General, upon receipt of a request for an on-site inspection, referring to an inspection area under the jurisdiction or control of any State Party, shall promptly conduct a consultation and clarification process with that State Party in order to clarify the concern raised in the request.

43. A State Party which receives a request for clarification, pursuant to paragraph 42, shall provide the Director-General with explanations and with other relevant information available as soon as possible, but not later than 48 hours after receiving the request. The Director-General shall communicate the clarification and any other information provided by the State Party to the Executive Council without delay.

Executive Council consideration

44. The Executive Council shall begin its consideration without delay upon receipt of UK on-site inspection request and take cognizance of all activities in regard to an on-site inspection.

45. When a State Party bases its request for a short phase of an on-site inspection:

- (a) on data collected by the International Monitoring System, which might be complemented by other relevant data, the Executive Council may decide by a two-thirds majority of its members present and voting against carrying out the inspection.
- (b) solely on data other than those collected by the International Monitoring System, the decision to approve an on-site inspection shall be made by a two-thirds majority of members of the Executive Council present and voting.

A decision to approve or disallow the request shall be made no later than 72 hours after having received the request.

46. An extended phase of an on-site inspection shall be conducted only if the Executive Council, not later than 120 hours after receiving the inspection request for that phase of an on-site inspection, approves it by a majority of its members present and voting.

47. The requesting and the requested States Parties may participate in the Executive Council's deliberations on inspection requests without voting.

Follow-up after Executive Council consideration

48. If the Executive Council decides against a short phase of an on-site inspection, preparations for that phase of the inspection shall be stopped, no further action on the inspection request shall be taken, and the States Parties concerned shall be informed accordingly. The Technical Secretariat shall begin preparations for an extended phase of an on-site inspection immediately following the Executive Council's approval of that phase of an inspection.

49. An on-site inspection authorised pursuant to paragraphs 45 and 46 shall be conducted without delay by an inspection team designated by the Director-General and in accordance with the procedures in the Protocol to this Treaty. In the case of a short phase of an on-site inspection, the inspection team shall arrive at the point of entry not later than 7 days following the receipt of the inspection request by the Executive Council. In the case of an extended phase on-site inspection, the inspection team shall arrive at the point of entry not later than 14 days after the inspection has been approved by the Executive Council.

50. Within 24 hours the Director-General shall notify all States Parties of the results of the consideration of the request by the Executive Council.

51. The Director-General shall notify the inspected State Party not less than 12 hours before the planned arrival of the inspection team at the point of entry.

52. The inspected State Party shall as necessary assist the inspection team in reaching the inspection area not later than 24 hours after arrival at the point of entry.

The Conduct of an On-Site Inspection

53. Each State Party shall permit the Organisation to conduct an on-site inspection on its territory or at places under its jurisdiction or

control, in accordance with the provisions and procedures of this Treaty and the Protocol.

54. The Director-General, in consultation with the requesting State Party, shall issue an inspection mandate for the conduct of the on-site inspection. The inspection mandate shall be the inspection request put into operational terms, and shall conform with the inspection request. The inspection mandate shall include the verification activities listed in paragraph 77 of the Protocol which are to be carried out by the inspection team and the equipment to be used.

55. The on-site inspection shall be conducted in accordance with the procedures laid down in the Protocol to this Treaty. The inspection team shall be guided by the principle of conducting the on-site inspection in the least intrusive manner possible, consistent with the effective and timely accomplishment of its mission. The inspectors shall seek only the information and data necessary for the purpose of the inspection.

56. The inspection team shall complete a short phase of an on-site inspection not later than 20 days after its arrival at the inspection area. The inspection team shall complete an extended phase of an on-site inspection not later than 180 days after its arrival at the inspection area to conduct the second phase inspection.

57. The inspection team may request, through the Director-General, an extension of time to complete the inspection, beyond the time-frames in paragraph 56, if the inspection team considers such an extension essential to enable it to fulfil its mission. The Director-General shall forward the request without delay to the Executive Council for decision. An extension of time shall not exceed 10 days for a short phase of an inspection or 30 days for an extended phase of an inspection. The decision to approve any extension of time shall be made by a two-thirds majority of members of the Executive Council present and voting. The Director-General shall notify the inspection team, the inspected State Party, and all other States Parties of the Executive Council's decision within 24 hours.

58. In the course of an on-site inspection in accordance with the provisions of this Treaty and the procedures provided for in the Protocol thereto, the inspected State Party shall have:

- (a) The right and the obligation to make every reasonable effort to demonstrate its compliance with this Treaty and, to this end, to enable the inspection team to full mandate;
- (b) The obligation to provide access within the inspection area for the sole purpose determining facts relevant to the purpose of the inspection; and

- (c) The right to take measures to protect sensitive installations and locations, and to prevent disclosure of confidential information not related to the purpose of this

59. The inspected State Party shall assist the inspection team throughout the inspection and facilitate its task. If the inspected State Party, pursuant to paragraphs 81 to 97 of the Protocol, limits the inspection team's access to the inspection area or specific sites therein, it shall make every reasonable effort through alternative means to demonstrate compliance with Article 1 of this Treaty.

Observers

60. With regard to an observer, the following shall apply:

- (a) The requesting State Party may, subject to the agreement of an inspected State Party, send a representative who may be a national either of the requesting State Party or of a third State Party, to observe the conduct of the on-site inspection;
- (b) An inspected State Party shall then grant access to the observer in accordance with the Protocol, annexed to this Treaty;
- (c) An inspected State Party shall, as a rule, accept the proposed observer, but if the inspected State Party exercises a refusal, that fact shall be recorded in the final report of the inspection.

Final Report of an On-Site Inspection

61. The final inspection report for either phase of an on-site inspection shall contain the factual findings as well as an assessment by the inspection team of the degree and nature of access and cooperation granted for satisfactory implementation of the on-site inspection.

62. The final inspection report for either phase of an on-site inspection, shall be promptly transmitted by the Director-General to the requesting and inspected States Parties as applicable, to the Executive Council and to all other States Parties. The Director-General shall further transmit promptly to the Executive Council the assessments of the requesting and inspected States Parties as applicable, as well as the views of other States Parties which may be conveyed to the Director-General for that purpose and then provide them to all States Parties.

63. The Executive Council shall, in accordance with its powers and functions, review the final report as soon as it is transmitted by the Director-General and, not later than 10 days after the receipt of the report, address any concerns as to:

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- (a) Whether any non-compliance has occurred;
 - (b) Whether the request had been within the scope of the Treaty;
and
 - (c) Whether the right to request an on-site inspection had been abused.

64. The inspected and the requesting States Parties as applicable shall have the right to participate in the review process without voting.

65. If the Executive Council reaches the conclusion, in keeping with its powers and functions, that further action may be necessary with regard to paragraph 63, it shall take the appropriate measures to redress the situation and to ensure compliance with this Treaty in accordance with Article VI.

66. The Executive Council shall inform the States Parties and the next session of the Conference of the States Parties of the outcome of the review process, as specified above, A special session of the Conference shall be convened if so decided, in accordance with paragraph 17 of Article III.

Measures to Prevent Frivolous or Abusive On-Site Inspection Requests and Measures for Redress

67. If the Executive Council decides against carrying out an on-site inspection, on the basis that the inspection request is frivolous or abusive, the Executive Council shall consider and decide on whether to recommend for decision by the Conference of the States Parties appropriate measures to seek to redress the situation, including the following:

- (a) Requiring the requesting State Party to pay for the cost of any action taken by the Technical Secretariat pursuant to the request;
- (b) Suspending the right of the requesting State Party to request an on-site inspection for a period of time; and,
- (c) Suspending the right of the requesting State Party to serve on the Executive Council for a period of time.

The measures listed in sub-paragraphs (a), (b) and (c) of this paragraph may also be recommended by the Executive Council for decision by the Conference of the States Parties if the Executive Council determines, following the carrying out of an on-site inspection, that the inspection request was frivolous or abusive.

Associated Measures and the International Exchange of Other Relevant Information

68. In order to:

- (a) contribute to the timely resolution of any compliance concerns arising from possible misinterpretation of verification data relating to chemical explosions;
- (b) assist in the calibration of the stations which are part of the component networks of the International Monitoring System; and
- (c) develop region-wide co-operation on and analysis of seismic monitoring to enhance the performance of the International Monitoring System, the verification regime as a whole, and confidence among regional states each State Party undertakes to co-operate with the Organisation and with other States Parties in implementing relevant associated measures as set out in Section III of the Protocol.

69. In order to enhance confidence in the Treaty and to strengthen the effectiveness of its verification regime, each State Party and the Technical Secretariat shall take appropriate steps to promote access by all States Parties to other technical information and data relevant to the verification of the basic obligations of the Treaty. In particular, each State Party shall exercise its best endeavours to:

- (a) assist in the assessment of the nature of events detected by the International Monitoring System by contributing to the Technical Secretariat as appropriate any relevant supplementary data or information available to it as a State Party, and by providing, when requested to do so by the International Data Centre, relevant data as appropriate recorded by national facilities not part of the International Monitoring System; and,
- (b) make available, on terms to be agreed with the Technical Secretariat, relevant technical data derived from commercial and other facilities not part of the International Monitoring System, including satellite- and land-based systems.

Such material acquired through these other means shall be referred to as "other relevant information".

70. Other relevant information as referred to in paragraph 69 shall be used, as appropriate, as supplementary data to help resolve compliance concerns regarding an event detected by the International

Monitoring System or an event beyond the technical detection capabilities of the International Monitoring System. Other relevant information shall be processed as clearly distinct from International Monitoring System data and data derived from the remaining components of the verification regime. In making other relevant information available to a States Parties in accordance with paragraph 12 (a) of this Article, the Technical Secretariat shall draw attention to its status.

Article VII: Settlement of Disputes

1. Disputes that may arise concerning the application or the interpretation of this Treat shall be settled in accordance with the relevant provisions of this Treaty and in conformity with the provisions of the Charter of the United Nations.

2. When a dispute arises between two or more States Parties, or between one or more States Parties and the Organisation, relating to the application or interpretation of this Treat the parties concerned shall consult together with a view to the expeditious settlement of the dispute by negotiation or by other peaceful means of the parties' choice, including recourse appropriate organs of this Treaty and, by mutual consent, referral to the International Court Justice in conformity with the Statute of the Court. The parties involved shall keep the Executive Council informed of actions being taken.

3. The Executive Council may contribute to the settlement of a dispute that may arise concerning the application or interpretation of this Treaty by whatever means it deems appropriate, including offering its good offices, calling upon the States Parties to a dispute seek a settlement through a process of their own choice, bringing the matter to the attention the Conference of the States Parties and recommending a time-limit for any agreed procedure.

4. The Conference of the States Parties shall consider questions related to disputes raised by States Parties or brought to its attention by the Executive Council. The Conference shall as it finds necessary, establish or entrust organs with tasks related to the settlement of these disputes in conformity with paragraph 28(f) of Article III.

5. The Conference of the States Parties and the Executive Council are separately empowered, subject to authorisation from the General Assembly of the United Nations, to request the International Court of Justice to give an advisory opinion on any legal question arising within the scope of the activities of the Organisation. An agreement between

the Organisation and the United Nations shall be concluded for this purpose in accordance with paragraph 40(h) of Article III.

6. This Article is without prejudice to Article VI of this Treaty.

Article VIII: Review of the Treaty

1. Ten years after the entry into force of this Treaty, or earlier if so requested by a two-thirds majority of the States Parties to the Treaty, by submitting a proposal to this effect to the Depositary, a Conference of the States Parties to the Treaty shall be held to review the operation of the Treaty with a view to assuring that the object and purpose of the Preamble and the provisions of the Treaty are being realised.

2. At intervals of 10 years thereafter, a majority of States Parties to the Treaty may obtain, by submitting a proposal to this effect to the Depositary, the convening of further Conferences with the same objectives. Such a conference may be held after an interval of less than 10 years if so requested by a two thirds majority of States Parties to the Treaty.

3. All Review Conferences shall be held immediately following a regular session of the Conference of the States Parties.

Article IX: Amendments

1. At any time after the entry into force of this Treaty, any State Party may propose amendments to this Treaty or the annexed Protocol. Any State Party may also propose changes, in accordance with paragraph 7, to the Protocol to this Treaty. Proposals for amendments shall be subject to the procedures in paragraphs 2, 3, 4, 5 and 6. Proposals changes, in accordance with paragraph 7, shall be subject to the procedures in paragraph

2. The proposed amendment shall be considered and adopted only by an Amendment Conference.

3. Any proposal for an amendment shall be communicated to the Director-General shall circulate it to all States Parties and the Depositary and seek the views of the States Parties on whether an Amendment Conference should be convened to consider the proposal. If one third or more of the States Parties notify the Director-General not later than 30 days after its circulation that they support further consideration of the proposal, the Director-General shall convene an Amendment Conference to which all States Parties invited.

4. The Amendment Conference shall be held immediately following a regular session of the Conference unless all States Parties which support the convening of an Amendment Conference request that it be held earlier. In no case shall an Amendment Conference be held less than 60 days after the circulation of the proposed amendment.

5. Amendments shall be adopted by the Amendment Conference by a positive vote of a majority of the States Parties with no State Party casting a negative vote.

6. Amendments shall enter into force for all States Parties 30 days after deposit instruments of ratification or acceptance by all those States Parties casting a positive the Amendment Conference.

7. In order to ensure the viability and effectiveness of this Treaty, paragraphs 7, 11, 13, 15, 120 and 121 of the Protocol and Tables 1 A, 1B, 2A, 2B, 3 and 4 of the Protocol shall be subject to changes in accordance with paragraph 8, if the proposed changes related only to matters of an administrative or technical nature. All other provisions Protocol shall not be subject to changes in accordance with paragraph 8.

8. Proposed changes referred to in paragraph 7 shall be made in accordance with the following procedures:

- (a) The text of the proposed changes shall be transmitted together with the necessary information to the Director-General. Additional information for the evaluation of the proposal may be provided by any State Party and the Director-General. The Director-General shall promptly communicate any such proposals and information to all States Parties, the Executive Council and the Depositary;
- (b) No later than 60 days after its receipt, the Director-General shall evaluate the proposal to determine all its possible consequences for the provisions of this Treaty and its implementation and shall communicate any such information to all States Parties and the Executive Council;
- (c) The Executive Council shall examine the proposal in the light of all information available to it, including whether the proposal fulfils the requirements in paragraph 7. Not later than 90 days after its receipt, the Executive Council shall notify its recommendation, with appropriate explanations, to all States Parties for consideration. States Parties shall acknowledge receipt within 10 days;

- (d) If the Executive Council recommends to all States Parties that the proposal be adopted, it shall be considered approved if no State Party objects to it within 90 days after receipt of the recommendation. If the Executive Council recommends that the proposal be rejected, it shall be considered rejected if no State Party objects to the rejection within 90 days after receipt of the recommendation;
- (e) If a recommendation of the Executive Council does not meet with the acceptance required under sub-paragraph (d), a decision on the proposal, including whether it fulfils the requirements of paragraph 7, shall be taken as a matter of substance by the Conference at its next session;
- (f) The Director-General shall notify all States Parties and the Depositary of any decision under this paragraph;
- (g) Changes approved under this procedure shall enter into force for all States Parties 180 days after the date of notification by the Director-General of their approval unless another time period is recommended by the Executive Council or decided by the Conference.

Article X: Duration and Withdrawal

1. This Treaty shall be of unlimited duration. Each State Party shall, in exercising its national sovereignty, have the right to withdraw from this Treaty if it decides that extraordinary events related to the subject matter of this Treaty have jeopardised its supreme interests.

2. Withdrawal shall be effected by giving notice six months in advance to all other State Parties, the Executive Council, the Depositary and the United Nations Security Council. Notice of withdrawal shall include a statement of the extraordinary event(s) which a State Party regards as jeopardising its supreme interests.

3. The withdrawal of a State Party from this Treaty shall not in any way affect the duty of States to continue fulfilling the obligations assumed under any relevant rules of international law, particularly the Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water.

Article XI: Status of the Protocol

The Protocol to this Treaty forms an integral part of the Treaty. Any reference to this Treaty includes the Protocol.

Article XII: Signature

This Treaty shall be open to all States for signature before its entry into force:

Article XIII: Ratification

This Treaty shall be subject to ratification by signatory States according to their respective constitutional processes.

Article XIV: Accession

Any State which does not sign this Treaty before its entry into force may accede to it at any time thereafter.

Article XV: Entry into Force

1. Subject to the provisions of paragraph 2 of this Article, this Treaty shall enter into force,

- (a) 180 days after the date on which all States Members of the Conference on Disarmament and all States observers to the 1996 Session of the Conference on Disarmament have deposited their instruments of ratification
- (b) In no case earlier than two years after its opening for signature.

2. If all States referred to in sub-paragraph (a) of paragraph 1 of this Article have not ratified the Treaty by the date of the second anniversary of its opening for signature, a conference of those States which have ratified the Treaty shall be convened within 90 days of that date at the seat of the Organisation. The conference shall examine the extent to which the requirement set out in sub-paragraph (a) of paragraph 1 of this Article has been met and may decide, by a two-thirds majority of all States present and voting, to waive that requirement. This Treaty shall enter into force 180 days after the date of such a decision for all States which have ratified the Treaty.

3. 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 30th day following the date of deposit of their instruments of ratification or accession.

Article XVI: Reservations

The Articles of this Treaty shall not be subject to reservations. The provisions of Protocol of this Treaty shall not be subject to reservations incompatible with its object and purpose.

Article XVII: Depository

1. The Secretary-General of the United Nations shall be the Depository of this Treaty and shall receive signatures, instruments of ratification and instruments of accession.

2. The Depository shall promptly inform all signatory and acceding States of the date of each signature, the date of deposit of each instrument of ratification or accession, the date of the entry into force of this Treaty and of any amendments and changes thereto, and the receipt of other notices.

3. The Depository shall send duly certified copies of this Treaty to the Governments of the signatory and acceding States.

4. This Treaty shall be registered by the Depository in accordance with Article 102 of the Charter of the United Nations.

Article XVIII: Authentic Texts

This Treaty, of which the Arabic, Chinese, English, French, Russian and Spanish are equally authentic, shall be deposited with the Secretary-General of the United Nations

PROTOCOL

I. The International Monitoring System

General Provisions

1. The International Monitoring System shall comprise monitoring facilities for seismological monitoring, radionuclide monitoring including certified laboratories, hydroacoustic monitoring, infrasound monitoring, and respective means of communication, and be supported by the International Data Centre of the Technical Secretariat.

2. The monitoring facilities incorporated into the International Monitoring System shall consist of those facilities specified in the Tables annexed to this Protocol. The International Monitoring System shall fulfil the technical and operational requirements specified in the Operational Manuals.

3. The Organisation, in accordance with Article III, shall, in co-operation and consultation with the States Parties, with other States, and with international organisations as appropriate, establish, complete if needed, and co-ordinate the operation and maintenance, and any future agreed modification or development of the International Monitoring System.

4. In accordance with appropriate agreements and procedures, a State Party or other State hosting or otherwise taking responsibility for International Monitoring System facilities and the Technical Secretariat shall agree and co-operate in establishing, operating, upgrading, financing, and maintaining monitoring facilities, related certified laboratory facilities and respective means of communication on its territory, within areas under its jurisdiction or control, or elsewhere in conformity with international law. Such co-operation shall be in accordance with the security and authentication requirements and technical specifications contained in the relevant Operational Manuals. Such a State shall give the Technical Secretariat authority to access a monitoring facility for checking equipment and communication links, and shall agree to make the necessary changes in the equipment and the operational procedures to meet agreed requirements. The Technical Secretariat shall provide to such States appropriate technical assistance as is deemed by the Executive Council to be required for the proper functioning of the facility as part of the International Monitoring System.

5. Modalities for such co-operation between the Organisation and a State Party or a State hosting or otherwise taking responsibility for facilities of the International Monitoring System shall be set out in agreements as appropriate in each case.

Part 1: Seismological Monitoring

6. Each State Party undertakes to co-operate in an international exchange of seismological data to assist in the verification of compliance with the Treaty. This cooperation shall include the establishment and operation of a global network of primary and auxiliary seismological monitoring stations. These stations shall provide data in accordance with agreed procedures to the International Data Centre.

7. The network of primary stations shall consist of the 50 stations specified in Table 1-A, annexed to this Protocol. These stations shall fulfil the technical and operational requirements specified in the Operational Manual for Seismological Monitoring and the International Exchange of Seismological Data. Uninterrupted data from the primary stations shall be transmitted, directly or through a national data centre, on-line to the International Data Centre.

8. To supplement the primary network, an auxiliary network of 119 stations shall provide information, directly or through a national data centre, to the International Data Centre on request. The auxiliary stations to be used are listed in Table 1-B, annexed to this Protocol.

The auxiliary stations shall meet the technical and operational requirements specified in the Operational Manual for Seismological Monitoring and the International Exchange of Seismological Data. Data from the auxiliary stations may at any time be requested by the International Data Centre and shall be immediately available through on-line computer connections.

TABLE 1

A: List of Seismological Stations Comprising the Primary Network

	<i>State Responsible for Station*</i>	<i>Location</i>	<i>Latitude</i>	<i>Longitude</i>	<i>Type</i>
1	Argentina	PLCA Paso Flores	40.73 S	70.55 W	3-C
2	Australia	WRAO Warramunga	19.94 S	134.34 E	array
3	Australia	ASAO Alice Springs	23.67 S	133.90 E	array
4	Australia	STKA Stephens Creek	31.88 S	141.59 E	3-C
5	Australia	MAW Mawson, Antarctica	67.60 S	62.87 E	3-C
6	Bolivia	LPAZ LaPaz	16.29S	68.13W	3-C
7	Brazil	BDFB Brasilia	15.64 S	48.01 W	3-C
8	Canada	ULMC Lac du Bonnet	50.25 N	95.88 W	3-C
9	Canada	YKAC Yellowknife	62.49 N	114.61 W	array
10	Canada	SCH Schefferville	54.82 N	66.78 W	3-C
11	Central African Republic	BGCA Bangui	05.18 N	18.42E	3-C
12	China	HAI Hailar	49.27 N	119.74 E	3-C > array
13	China	LZH Lanzhou	36.09 N	103.84 E	3-C > array
14	Colombia	RSLC El Rosal	04.86 N	74.33 W	3-C
15	Cote d'Ivoire	DBIC Dimbroko	06.67 N	04.86 W	3-C
16	Egypt	LXEG Luxor	26.00 N	33.00 E	array

17	Finland	FINES Lahti	61.44 N	26.08 E	array
18	France	PPT Tahiti	17.57 S	149.57 W	3-C
19	Germany	GECO Freyung	48.85 N	13.70 E	array
20	India	GBAO Gauribidanur	13.60 N	77.44 E	array
21	Iran (Islamic Republic of)	THR Tehran	35.82 N	51.39 E	3-C
22	Japan	MJAR Matsushiro	36.54 N	138.21 E	array
23	Kazakhstan	AKTO Aktubinsk	50.43 N	58.02 E	3-C > array
24	Kenya	KMBO Kilima Mbogo	01.27 S	36.80 E	3-C
25	Mongolia	JAVM Javkhlant	47.99 N	106.77 E	3-C > array
26	Niger	New Site	to be determined	to be determined	3-C > array
27	Norway	NAO Hamar	60.82 N	10.83 E	array
28	Norway	ARAO Karasjok	69.53 N	25.51 E	array
29	Pakistan	PRPK Pari	33.65 N	73.25 E	array
30	Paraguay	CPCP Villa Florida	26.33 S	57.33 W	3-C
31	Republic of Korea	KSRS Wonju	37.45 N	127.92 E	array
32	Russian Federation	KBZ Khabaz	43.73 N	42.90 E	3-C
33	Russian Federation	ZALR Zalesovo	53.94 N	84.81 E	3-C > array
34	Russian Federation	NRIL Norilsk	69.40 N	88.10 E	3-C
35	Russian Federation	PDYO Peleduy	59.63 N	112.70 E	array
36	Russian Federation	PTKM Petropavlovsk- Kamchatsky	53.12 N	157.78 E	3-C > array
37	Russian Federation	USU Ussuriysk	44.28 N	132.08 E	3-C > array

38	Saudi Arabia	New Site	to be determined	to be determined	array
39	South Africa	BOSA Boshof	28.61 S	25.56 E	3-C
40	Spain	ESDC Sonseca	39.68 N	03.96 W	array
41	Thailand	CMTO Chiang Mai	18.82 N	98.95 E	array
42	Tunisia	THA Thala	35.56 N	08.70 E	3-C
43	Turkey	BRTR Belbashi	39.87 N	32. 79 E	array
44	Turkmenistan	GEYT Alibeck	37.93 N	58.12E	array
45	Ukraine	AKASG Malin	50.42 N	29.12E	array
46	United States of America	LJTX Lajitas, TX	29.33 N	103.67 W	array
47	United States of America	PFCA Pinon Flat, CA	33.61 N	116.46 W	3-C
48	United States of America	PIWY Pinedale, WY	42.77 N	109.56 W	array
49	United States of America	ELAK Eilson, AK	64.77 N	146.89 W	array
50	United States of America	VNDA Vanda, Antarctica	77.51 S	161.85 E	3-C

3-C > array : Indicates that the site could start operations in the International Monitoring System as a three-component station and be upgraded to an array at a later time.

* Appears without prejudice to the question of sovereignty

TABLE 1-B

List of Seismological Stations Comprising the Auxiliary Network

	<i>State Responsible for Station*</i>	<i>Location</i>	<i>Latitude</i>	<i>Longitude</i>	<i>Type</i>
1	Argentina	CFA Coronel Fontana	31.61S	68.24W	3-C
2	Argentina	USHA Ushuaia	55.00S	68.00W	
3	Armenia	GNI Garni	40.05N	44.72E	3-C
4	Australia	CTA Towers, QLD	20.09S	146.25E	3-C

5	Australia	FTTZ Fitzroy Crossing, WA	18.10S	125.64E	3-C
6	Australia	NWAO Narrogin, WA	32.93S	117.23E	3-C
7	Bolivia	SIV San Ignacio	15.99S	61.07W	3-C
8	Botswana	LBTB Lobatse	25.01S	25.60E	3-C
9	Brazil	PTGA Pitinga	0.73S	59.97W	3-C
10	Brazil	RGNB Rio Grande do Norte	6.91S	36.95W	3-C
11	Canada	FPB Iqaluit, N.W.T.	63.75N	68.55W	3-C
12	Canada	DLBC Dease Lake, B.C.	58.42N	130.06W	3-C
13	Canada	SADO Sadowa, Ont.	44.75N	79.14W	3-C
14	Canada	BBB Bella Bella, B.C.	52.18N	128.11W	3-C
15	Canada	MBC Mould Bay, N.W.T.	76.24N	119.36W	3-C
16	Canada	INK Inuvik, N.W.T.	68.3 1N	133.52W	3-C
17	Chile	RPN Rapa Nui, Easter Island	27.16S	109.43W	3-C
18	Chile	LVC Limon Verde	22.59S	68.93W	3-C
19	China	BJT Baijiatuan	40.02N	116.17E	3-C
20	China	KMI Kunming	25.15N	102.75E	3-C
21	China	SSE Shesan	31.10N	121. 19E	3-C
22	China	XAN Xi'an	34.04N	108.92E	3-C
23	Costa Rica	JTS Las Juntas de Abangares	10.29N	84.95W	3-C
24	Czech Republic	VRAC Vranov	49.31N	16.60E	3-C
25	Denmark	SFJ Sondre Stromfjord, Greenland	67.05N	50.30W	3-C

26	Djibouti	ATD Arta Tunnel	11.53N	42.85E	3-C
27	Egypt	KEG Kottamya	29.93N	31.83E	3-C
28	Ethiopia	FURI Furi	8.90N	38.68E	3-C
29	Fiji	MSVF Monasavu, Viti Levu	17.75S	178.05E	3-C
30	France	NOUC Port Laguerre, New Caledonia	22.10S	166.30E	3-C
31	France	KOG Kourou, French Guiana	5.21N	52.73W	3-C
32	Gabon	BAMB Bambay	1.66S	13.61E	3-C
33	Germany	VNA Georg von Neumayer, Antarctica	70.61S	8.37W	3-C
34	Greece	IDI Anogia, Crete	35.28N	24.89E	3-C
35	Guatemala	RDG Rabir	15.01N	90.47W	3-C
36	Iceland	BORG Borgarnes	64.75N	21.33W	3-C
37	India	INDIA New Delhi	26.68N	77.22E	3-C
38	Indonesia	PACI Jakarta, Java	6.50S	107.00E	3-C
39	Indonesia	JAY Jayapura, Irian Jaya	2.52S	140.70E	3-C
40	Indonesia	SWI Sorong, Jazirah Doberai	0.86S	131.26E	3-C
41	Indonesia	PSI Parapat, Sumatra	2.70N	98.92E	3-C
42	Indonesia	SULW Sulawesi	4.00S	120.00E	3-C
43	Indonesia	KUG Kupang, Timor	10.16S	123.59E	3-C
44	Iran (Islamic Republic of)	KRM Kerman	30.28N	57.07E	3-C
45	Iran (Islamic Republic of)	MSN Masjed-e-Solayman	31.93N	49.30E	
46	Israel	MBH Eilat	29.79N	34.9 IE	3-C

47	Israel	PARD Parod	32.55N	35.26E	array
48	Italy	ENAS Enna, Sicily	37.50N	14.30E	3-C
49	Japan	JNU Ohita, Kyushu	33.12N	130.88E	3-C
50	Japan	JOW Kunigami, Okinawa	26.83N	128.29E	3-C
51	Japan	JHJ Hachijojima, Izu Island	33.12N	139.82E	3-C
52	Japan	JKA Kamikawa-asahi, Hokkaido	44.12N	142.50E	3-C
53	Japan	JCJ Chichijima, Ogasawara	27.10N	142.18E	3-C
54	Kazakhstan	BRVK Borovoye	53.06N	70.28E	array
55	Kazakhstan	KURK Kurchatov	50.72N	78.62E	array
56	Kazakhstan	MAK Makanchi	46.81N	81.98E	3-C
57	Kyrgyzstan	AAK Ala-Archa	42.64N	74.49E	3-C
58	Madagascar	TAN Antananarivo	18.92S	47.55E	3-C
59	Mali	KOWA Kowa	14.50N	4.02W	3-C
60	Mexico	TEYM Tepich, Yucatan	20.21N	88.34W	3-C
61	Mexico	TUVM Tuzandepeti, Veracruz	18.03N	94.42W	3-C
62	Mexico	LPBM La Paz, Baja	24.17N	110.21W	3-C
63	Morocco	MDT Midelt	32.82N	4.61W	3-C
64	Namibia	TSUM Tsumeb	19.13S	17.42E	3-C
65	Nepal	EVN Everest	27.96N	86.82E	3-C
66	New Zealand	EWZ Erewhon, South Island	43.51S	170.85E	3-C
67	New Zealand	RAO Raoul Island	29.15S	177.52W	3-C

68	New Zealand	URZ Urewera, North Island	38.26S	177.1 IE	3-C
69	New Zealand	RAR Rarotonga, Cook Islands	21.21S	159.77W	3-C
70	Norway	SPITS Spitsbergen	78.18N	16.37E	array
71	Norway	JMI Jan Mayen Island	70.92N	8.72W	
72	Oman	WSAR Wadi Sarin	23.00N	58.00E	3-C
73	Papua New Guinea	PMG Port Moresby	9.41S	147.15E	3-C
74	Papua New Guinea	BIAL Bialla	5.31S	151.05E	3-C
75	Peru	CAJP Cajamarca	7.00S	78.00W	3-C
76	Peru	NNA Nana	11.99S	76.84W	3-C
77	Philippines	DAY Davao, Mindanao	7.09N	125.57E	3-C
78	Philippines	TGY Tagaytay, Luzon	14.10N	120.94E	3-C
79	Romania	MLR Muntele Rosu	45.50N	25.90E	3-C
80	Russian Federation	KIRR Kirov	58.43N	50.02E	3-C
81	Russian Federation	KIVO Kislovodsk	43.96N	42.70E	array
82	Russian Federation	OBN Obninsk	55.12N	36.60E	3-C
83	Russian Federation	ARU Arti	56.43N	58.56E	3-C
84	Russian Federation	SEY Seymchan	62.93N	152.37E	3-C
85	Russian Federation	TLY Talaya	51.68N	103.64E	3-C
86	Russian Federation	YAK Yakutsk	62.01N	129.43E	3-C
87	Russian Federation	URG Urgal	51.10N	132.36E	3-C
88	Russian Federation	BIL Bilibino	68.04N	166.37E	3-C
89	Russian Federation	TIXI Tiksi	71.66N	128.87E	3-C

90	Russian Federation	YSSK Yuzhno-Sakhalinsk	46.95N	142.75E	3-C
91	Russian Federation	MA2 Magadan	59.58N	150.78E	3-C
92	Russian Federation	UFA Zilim	53.85N	57.05E	3-C
93	Samoa	AFI Afiamalu	13.91S	171.78W	3-C
94	Saudi Arabia	RAYN ArRayn	23.60N	45.60E	3-C
95	Senegal	MBO M'Bour	14.39N	16.96W	3-C
96	Solomon Islands	HNR Honiara, Guadalcanal	9.43S	159.95E	3-C
97	South Africa	SUR Sutherland	32.38S	20.81E	3-C
98	Sweden	HFS Hagfors	60.13N	13.70E	array
99	Switzerland	DAVOS Davos	46.84N	9.79E	3-C
100	Uganda	MBRU M'Barara	0.36N	30.40E	3-C
101	United Kingdom	EKA Eskdalemuir	55.33N	3.16W	array
102	United States of America	GUMO Guam, Marianas Islands	13.59N	144.87E	3-C
103	United States of America	PMSA Palmer Station	64.77S	64.07W	3-C
104	United States of America	TKL Tuckaleechee Caverns, TN	35.66N	83.77W	3-C
105	United States of America	YBH Yreka, CA	41.73N	122.71W	3-C
106	United States of America	KDC Kodiak Island, AK	57.75N	152.49W	3-C
107	United States of America	ALQ Albuquerque, NM	34.95N	106.46W	3-C
108	United States of America	ATTU Attu Island, AK	52.80N	172.70E	3-C
109	United States of America	ELK Elko, NV	40.74N	115.24W	3-C
110	United States of America	SPA South Pole, Antarctica	90.00S	115.00E	3-C

111 United States of America	NEW Newport, WA	48.26N	117.12W	3-C
112 United States of America	SJG San Juan, PR	18.11N	66.15W	3-C
113 Venezuela	SDV Santo Domingo	8.89N	70.63W	3-C
114 Venezuela	PCRV Puerto la Cruz	10.18N	64.64W	3-C
115 Zambia	LSZ Lusaka	15.28S	28.19E	3-C
116 Zimbabwe	BUL Bulawayo			

* Appears without prejudice to the question of sovereignty.

Part 2: Radionuclide Monitoring

9. Each State Party to the Treaty undertakes to co-operate in an international exchange of data on radionuclides in the atmosphere to assist in the verification of compliance with the Treaty. This co-operation shall include the establishment and operation of a global network of radionuclide monitoring stations and certified laboratories. The network shall provide data in accordance with agreed procedures to the International Data Centre.

10. The network of stations to measure radionuclides in the atmosphere shall comprise an overall network of 75 stations, with a further 5 such stations, located as specified in Table 2-A annexed to this Protocol. All stations shall be capable of monitoring for the presence of relevant particulate matter in the atmosphere, 20 being also capable of monitoring for the presence of relevant noble gases. The States Parties shall develop and consider one year after entry into force, at the first regular annual session of the Conference of States Parties, a strategy for implementing noble gas monitoring capability throughout the network. All monitoring stations shall fulfil the technical and operational requirements specified in the Operational Manual for Radionuclide Monitoring and the International Exchange of Radionuclide Data.

11. The network of radionuclide monitoring stations shall be supported by 12 existing laboratories as specified in Table 2-B annexed to this Protocol. The laboratories shall be certified by the Technical Secretariat for the performance, on contract to the Technical Secretariat and on a fee-for-service basis, of the detailed analysis of samples from radionuclide monitoring stations. These certified laboratories shall provide the results of such analysis to the International Data Centre

TABLE 2-A

Radionuclide Stations Incorporated into the International Monitoring System

	<i>State Responsible for Station *</i>	<i>Location</i>	<i>Latitude</i>	<i>Longitude</i>	<i>Type (particulate or Noble gas)</i>
1	Argentina	Salta	24.00S	65.00W	
2	Argentina	Bariloche	41.10S	71.25W	
3	Argentina	Buenos Aires	34.00S	58.00W	
4	Australia	Mawson, Antarctica	67.60S	62.50E	
5	Australia	Townsville	19.20S	146.80E	
6	Australia	Macquarie Is.	54.00S	159.00E	
7	Australia	Cocos Is.	12.00S	97.00E	
8	Australia	Darwin	12.40S	130.70E	
9	Australia	Perth	31.96S	115.80E	
10	Australia	Melbourne	37.45S	144.58E	
11	Brazil	Rio de Janeiro	22.54S	43.10W	
12	Brazil	Recife	8.00S	35.00W	
13	Cameroon	Douala	4.20N	9.90E	
14	Canada	Vancouver	49.25N	123.17 W	
15	Canada	Resolute	74.70N	94.90W	
16	Canada	Yellowknife	62.45N	114.48 W	
17	Canada	St. John's	47.00N	53.00W	
18	Chile	Punta Arenas	53.08S	70.55W	
19	Chile	Hang-Roa, Easter Is.	27.07S	108.35 W	
20	China	Lanzhou	35.80N	103.30E	
21	China	Guangzhou	23.00N	113.30E	

	<i>State Responsible for Station *</i>	<i>Location</i>	<i>Latitude</i>	<i>Longitude</i>	<i>Type (particulate or Noble gas)</i>
22	China	Beijing	39.75N	116.20E	
23	Ecuador	I. San Cristobal, Galapagos	1.00S	89.20W	
24	Ethiopia	Filtu	5.50N	42.70E	
25	Fiji	Nandi	18.00S	177.50E	
26	France	Papeete, Tahiti	17.00S	150.00 W	
27	France	Point-a-Pitre, Guadeloupe	17.00N	62.00W	
28	France	Reunion Is.	21.05S	55.57E	
29	France	Port-aux-Francais, Kerguelen Is.	49.00S	70.00E	
30	France	Cayenne, French Guiana	5.00N	52.00W.	
31	France	Dumont d'Urville, Antarctica	66.00S	140.00E	
32	Germany	Schauinsland	47.90N	7.90E	
33	Iceland	Reykjavik	64.40N	21.90W	
34	India	Allahabad	25.28N	81.54E	
35	Iran (Islamic Republic of)	Tehran	35. 00N	52.00E	
36	Japan	Okinawa	26.18N	127.18E	
37	Japan	Takasaki, Gunma	36.31N	139.00E	
38	Kiribati	Kiritimati (Christmas Is)	2.00N	157.00 W	
39	Kuwait	Kuwait City	29.00N	48.00E	
40	Libya	Misratah	32.50N	15.00E	
41	Malaysia	Kuala Lumpur	2.55N	101.47E	
42	Mauritania	Nouakchott	18.00N	17.00W	
43	Mexico	Baja	28.00N	113.00 W	
44	Mongolia	Ulan-Bator (Ulaanbaatar)	47.52N	107.03E	

	<i>State Responsible for Station *</i>	<i>Location</i>	<i>Latitude</i>	<i>Longitude</i>	<i>Type (particulate or Noble gas)</i>
45	New Zealand	Chatham Is.	44.00S	176.00 W	
46	New Zealand	Rarotonga	21.25S	159.75 W	
47	New Zealand	Kaitaia	35.12S	172.27E	
48	Niger	Bilma	18.00N	17.00E	
49	Norway	Svalbard	78.00N	15.00E	
50	Panama	Panama City	8.92N	79.60W	
51	Papua New Guinea	New Hanover	3.00S	150.00E	
52	Philippines	Quezon City	14.45N	121.03E	
53	Portugal	Vila do Proto (Azores)	37.44N	25.40W	
54	Russian Federation	Kirov	58.59N	49.68E	
55	Russian Federation	Norilsk	69.40N	88.10E	
56	Russian Federation	Peleduy	59.63N	112.70E	
57	Russian Federation	Bilibino	68.02N	168.26E	
58	Russian Federation	Ussuriysk	43.70N	131.90E	
59	Russian Federation	Zalesovo	53.94N	84.81E	
60	Russian Federation	Petropavlovsk-Kamchatskiy	53.00N	158.00E	
61	Russian Federation	Dubna	56.76N	37.05E	
62	South Africa	Marion Is.	46.50S`	37.00E	
63	Sweden	Stockholm	59.39N	17.96E	
64	Tanzania	Dar-es-Salaam	6.00S	39.00E	
65	Thailand	Bangkok	13.75N	100.50E	
66	United Kingdom	BIOT/Chagos Archipelago	7.00S	72.00E	
67	United Kingdom	St. Helena	16.00S	6.00W	

	<i>State Responsible for Station *</i>	<i>Location</i>	<i>Latitude</i>	<i>Longitude</i>	<i>Type (particulate or Noble gas)</i>
68	United Kingdom	Edinburgh, Tristan da Cunha	37.00S	12.33W	
69	United States of America	Halley, Antarctica	76.00S	28.00W	
70	United States of America	Sacramento, CA	38.70N	121.40 W	
71	United States of America	Sand Point, AK	55.00N	160.00 W	
72	United States of America	Melbourne, FL	28.25N	80.60W	
73	United States of America	Palmer, Antarctica	64.46S	64.04W	
74	United States of America	Ashland, KS	37.19N	99.77W	
75	United States of America	Charlottesville, VA	38.00N	78.00W	
76	United States of America	Salchaket, AK	64.40N	147.06 W	
77	United States of America	Wake Is.	19.30N	166.60E	
78	United States of America	Midway Is.	28.00N	177.00 W	
79	United States of America	Waltiwawa, HI	21.47N	158.03 W	
80	United States of America	Upi, Guam	13.65N	144.86E	

* Appears without prejudice to the question of sovereignty.

TABLE 2B
Certified Laboratories

	<i>State Responsible for Certified Laboratories*</i>	<i>Laboratory and Location</i>	<i>Latitude</i>	<i>Longitude</i>
1	Argentina	National Board of Nuclear Regulation Buenos Aires	34.00S	58.00W
2	Australia	Australian Radiation Laboratory Melbourne	37.45S	144.58E
3	Canada	Health Canada Ottawa	45.33N	75.75W
4	China	Beijing	39.75N	116.20E
5	Finland	Centre for Radiation and Nuclear Safety Helsinki	to be advised	to be advised
6	France	Atomic Energy Commission Montlhery	48.49N	2.20E
7	India	Bombay	19.01N	72.92E
8	Japan	Tokai, Ibaraki (Takasaki, Gunma)	36.45N	140.60E
9	Russian Federation	Ministry of Defence Special Verification Services, Dubna, Moscow	56.76N	37.05E
10	United Kingdom	AWE Blacknest Brimpton	51. 50N	1.50W
11	United States of America	USAF Technical Applications Centre Sacramento	to be advised	to be advised

* Appears without prejudice to the question of sovereignty.

and in so doing fulfil the technical and operational requirements specified in the Operational Manual on Radionuclide Monitoring and the International Exchange of Radionuclide Data.

Part 3: Hydroacoustic Monitoring

12. Each State Party undertakes to co-operate in an international exchange of hydroacoustic data to assist in the verification of compliance with the Treaty. This co-operation shall include the establishment and operation of a global network of hydroacoustic monitoring stations. These stations shall provide data in accordance with agreed procedures to the International Data Centre, directly or through a national data centre.

13. The network of hydroacoustic stations shall consist of the stations specified in Table 3, annexed to this Protocol, and comprise an overall network of 6 hydrophone and 5 T-phase stations. These stations shall fulfil the technical and operational requirements specified in the Operational Manual for Hydroacoustic Monitoring and the International Exchange of Hydroacoustic Data.

TABLE 3

Hydroacoustic Stations Incorporated into the International Monitoring System

<i>State Responsible for Station *</i>	<i>Location</i>	<i>Latitude</i>	<i>Longitude</i>	<i>Type</i>
Australia	Cape Leeuwin	34.4S	115.1E	Hydrophone
Canada	Queen Charlotte Is.	52.1N	131.5W	T-phase
Chile	Juan Fernandez Is.	33.7S	78.8W	Hydrophone
France	Crozet	46.5S	52.2E	Hydrophone
France	Guadeloupe	16.3N	61.1W	T-phase
Mexico	Clarion Is.	18.2N	114.6W	T-phase
Portugal	Flores Is.	39.3N	31.3W	T-phase
United Kingdom	BIOT/Chagos Arch.	7.3S	72.4E	Hydrophone
United Kingdom	Tristan da Cunha	37.2S	12.5W	T-phase
United States	Ascension Is.	8.0S	14.4W	Hydrophone
United States	Wake Island	19.3N	166.6E	Hydrophone

*Appears without prejudice to the question of sovereignty.

Part 4: Infrasound Monitoring

14. Each State Party undertakes to co-operate in an international exchange of infrasound data to assist in the verification of compliance with the Treaty. This co-operation shall include the establishment and

TABLE 4
Infrasound Stations Incorporated into the International Monitoring System

	<i>State Responsible for Station *</i>	<i>Location</i>	<i>Latitude</i>	<i>Longitude</i>	<i>Type</i>
1	Argentina	Paso Flores	40.73S	70.55W	
2	Australia	Mawson Base, Antarctica.	67.60S	62.87E	
3	Australia	Narrogin	32.93S	117.23E	
4	Australia	Hobart	42.07S	147.21E	
5	Australia	Cocos Is.	12.30S	97.00E	
6	Australia	Warramunga	19.93S	134.33E	
7	Rep. Of Belau	Palau Is.	7.50N	134.50E	
8	Bolivia	La Paz	16.29S	68.13W	
9	Brazil	Brasilia	15.64S	48.01W	
10.	Canada	Lac du Bonnet	50.25N	95.88W	
11	Republic of Cape Verde	Cape Verde Is.	16.00N	24.00W	
12	Central African Republic	Bangui	5.18N	18.42E	
13	Chile	Easter Is.	27.00S	109.20W	
14	Chile	Juan Fernandez Is.	33.80S	80.70W	
15	China	Beijing	40.00N	116.00E	
16	China	Kunming	25.00N	102.80E	
17	Cote d'Ivoire	Dimbokro	6.67N	4.86W	
18	Denmark	Dundas, Greenland	76.53N	68.67W	
19	Djibouti	Djibouti	11.30N	43.50E	
20	Ecuador	Galapagos Islands	0.00N	91.70W	
21	France	Marquesas Island	10.00S	140.00W	
22	France	Port LaGuerre, New Caledonia	22.10S	166.30E	

	<i>State Responsible for Station *</i>	<i>Location</i>	<i>Latitude</i>	<i>Longitude</i>	<i>Type</i>
23	France	Kerguelen	49.15S	69.10E	
24	France	Tahiti Is.	17.57S	149.57W	
25	France	Kourou, French Guiana	5.21N	52.73W	
26	Germany	Freyung	48.85N	13.70E	
27	Germany	Georg von Neumayer, Antarctica	70.60S	8.37W	
28	India	Gauribidanur	13.59N	77.43E	
29	Iran	Tehran	35.74N	51.39E	
30	Japan	Tsukuba	36.00N	140.00E	
31	Kazakhstan	Aktubinsk	50.43N	58.02E	
32	Kenya	Kilima Mbogo	1.27S	36.80E	
33	Madagascar	Antananarivo	18.80S	47.48E	
34	Mongolia	Javhklant	47.99N	106.77E	
35	Namibia	Tsumeb	19.13S	17.42E	
36	New Zealand	Chatham Island	44.00S	176.00W	
37	Norway	Karasjok	69.58N	25.51E	
38	Paraguay	Villa Florida	26.33S	57.33W	
39	Pakistan	Pari	33.65N	73.25E	
40	Papua New Guinea	Rabaul	4.13S	152.11E	
41	Portugal	Azores Is.	38.30N	28.00W	
42	Russian Federation	Dubna	56.76N	37.05E	
43	Russian Federation	Petropavlovsk	53.00N	158.00E	
44	Russian Federation	Ussuriysk	44.00N	132.00E	
45	Russian Federation	Zalesovo	53.94N	84.81E	
46	South Africa	Boshof	28.60S	25.42E	
47	Tunisia	Thala	35.56N	8.70E	

	<i>State Responsible for Station *</i>	<i>Location</i>	<i>Latitude</i>	<i>Longitude</i>	<i>Type</i>
48	United Kingdom	Tristan da Cunha Is.	37.00S	12.30W	
49	United Kingdom	Ascension Is.	8.00S	14.30W	
50	United Kingdom	Bermuda Is.	32.00N	64.50W	
51	United Kingdom	BIOT/Chagos Archipelago	5.00S	72.00E	
52	United States of America	Siple Base, Antarctica	75.50S	83.55W	
53	United States of America	Windless Bight, Antarctica	77.50S	161.84E	
54	United States of America	Newport, Wa.	48.26N	117.12W	
55	United States of America	Pinon Flats, Ca	33.60N	116.45W	
56	United States of America	Midway Is.	28.13N	177.22W	
57	United States of America	Central Puna, Hawaii	19.59N	155.28W	
58	United States of America	Wake Is.	19.16N	166.38E	
59	United States of America	South Pole, Antarctica	90.00S	115.00E	
60	United States of America	Eilson, Alaska	64.77N	146.89W	

* Appears without prejudice to the question of sovereignty.

operation of a global network of infrasound monitoring stations. These stations shall provide data in accordance with agreed procedures to the International Data Centre, directly or through a national data centre.

15. The specified network of infrasound stations shall consist of the stations specified in Table 4, annexed to this Protocol, and comprise an overall network of 60 stations. These stations shall fulfil the technical and operational requirements specified in the Operational Manual for Infrasound Monitoring and the International Exchange of Infrasound Data.

Part 5: Processing and Analysis of Reporting on and Access to International Monitoring System Data

16. The Technical Secretariat's International Data Centre shall routinely receive all data forwarded or retrieved from International Monitoring System facilities, including samples and the results of analysis conducted at certified laboratories.

17. The International Data Centre shall process such data by means of automated and interactive analysis according to agreed procedures (including the co-processing where possible of data from the different monitoring technologies comprising the International Monitoring System). This analysis shall be directed towards the detection and extraction of relevant signals, the computation of respective parameter information, the association of such signals and data with given relevant events, and towards locating and characterising events capable of giving rise to compliance concerns. The results of such analysis, together with raw data where appropriate, shall be made available to States Parties through regular bulletins. The analytical summaries provided in such bulletins will be without prejudice to final judgments with regard to the nature of a detected event or with regard to non-compliance, which shall remain the responsibility of States Parties, acting in accordance with Article VI.

18. The International Data Centre shall provide States Parties with open and convenient access to International Monitoring System data on an equal basis. In order to assist multilateral verification of the treaty, and to support the national verification requirements of individual States Parties, the International Data Centre shall provide for States Parties to access International Monitoring System data and related data products by means of:

- (a) automatic and regular forwarding to a State Party via electronic means of its selection out of the International Data Centre's

standard reporting products (including presentation of such reporting in a customised format where such a service is offered by the Centre);

- (b) individual requests for the retrieval from the International Data Centre's database of data satisfying specified criteria;
- (c) access tools permitting States Parties using international communications circuits to search the database interactively for data of interest, and to retrieve such data for further analysis; and,
- (d) the provision of the regular reporting products or responses to States Parties individual requests referred to in sub-paragraphs (a) and (b) in alternative hard-copy or electronic media format.

19. The International Data Centre shall produce an agreed standard range of regular global reporting bulletins, reviewing International Monitoring System data on the basis of individual monitoring technologies and of fusion of the results therefrom.

20. The precise procedures to be adopted by the International Data Centre in receiving, processing, analysing, reporting on, and archiving International Monitoring System data shall be elaborated in the Operational Manual for the International Data Centre.

Part 6: Authentication of International Monitoring System Data and Data Security

21. Each State Party undertakes to co-operate with other States Parties and with the Organisation in the creation, development and the implementation of procedures for the authentication of International Monitoring System data and for enhancing the security of the global data exchange.

22. Each State Party shall, pursuant to its agreement with the Organisation on verification activities and to the relevant Operational Manuals, be responsible for implementing security and data authentication procedures related to monitoring facilities for which it is responsible, as well as to transmission of data to the International Data Centre.

II. On Site Inspections

Part 1: General Rules and Procedures

23. The rules and procedures in this Section shall be implemented pursuant to the provisions for on-site inspection set out in Article V.

The detailed arrangements for implementing these rules and procedures shall be elaborated as appropriate in the Operational Manual for On-Site Inspections.

24. All requests and notifications by States Parties to the Organisation shall be transmitted through their National Authorities. Requests and notifications shall be in one of the official languages of this Treaty. Responses by the Organisation shall use the language of a request or notification transmitted to it.

Part 2: Standing Arrangements

Designation of Inspectors and Inspection Assistants

25. An on-site inspection shall be carried out by personnel and experts of the Technical Secretariat designated as inspectors, assisted by other experts also designated as inspectors. The inspectors may be assisted in carrying out the inspection by designated inspection assistants, such as medical, security and administrative personnel, aircrew and interpreters. The Technical Secretariat shall maintain and update a list of designated inspectors and inspection assistants.

26. Not later than 30 days after the entry into force of this Treaty the Technical Secretariat shall communicate, in writing to all States Parties, the names, nationalities and ranks of the inspectors and/or inspection assistants proposed for designation, as well as a description of their qualifications and professional experience.

27. The Technical Secretariat shall, as necessary, submit further proposals for the designation of inspectors or inspection assistant in addition to the initial list, and in any case keep the list updated on a regular basis

28. Each State Party shall immediately acknowledge receipt of the list of inspectors and/or inspection assistants proposed for designation. Any inspector or inspection assistants included in this list shall be regarded as accepted unless a State Party, not later than 30 days after acknowledgment of receipt of the list, declares its non-acceptance in writing. The State Party may include the reason for the objection. In the case of non-acceptance, the proposed inspector or inspection assistant shall not undertake or participate in verification activities on the territory or in any other place under the jurisdiction or control of the State Party which has declared its non-acceptance. The Technical Secretariat shall immediately confirm receipt of the notification of objection.

29. Subject to the provision in paragraph 30, a State Party has the right at any time to object to an inspector or inspection assistant who

has already been accepted. It shall notify the Technical Secretariat of its objection in writing and shall include the reason for the objection. Such objection shall come into effect 30 days after receipt by the Technical Secretariat. The Technical Secretariat shall immediately confirm receipt of the notification of objection and inform the State Party of the date on which the inspector will cease to be designated for that State Party.

30. A State Party that has been notified of an inspection shall not seek to have removed from the inspection team any of the designated inspectors and/or inspection assistants named in the inspection team list.

31. The number of inspectors and inspection assistants accepted by a State Party must be sufficient to allow for availability and rotation of appropriate numbers of inspectors and inspection assistants.

32. If, in the opinion of the Director-General, the non-acceptance of proposed inspectors or inspection assistants impedes the designation of a sufficient number of inspectors or inspection assistants or otherwise hampers the effective fulfilment of the tasks of the Technical Secretariat, the Director-General shall refer the issue to the Executive Council.

33. The members of the inspection team carrying out an inspection of an area which includes a facility of a State Party located on the territory of another State Party shall be designated in accordance with the procedures set forth above as applied to both States Parties.

Privileges and Immunities

34. Each State Party shall, not later than 30 days after acknowledgment of receipt of the list of inspectors and inspection assistants or of changes thereto, provide multiple entry/exit and/or transit visas and other such documents to enable each inspector or inspection assistant enter and to remain on the territory of that State Party for the purpose of carrying out inspection activities. These documents shall be valid for at least two years after their provision to the Technical Secretariat.

35. To exercise their functions effectively, members of inspection teams shall be accorded privileges and immunities as set forth in subparagraphs (a) to (i). Privileges and immunities shall be granted to members of the inspection team for the sake of this Treaty and not for the personal benefit of the individuals themselves. Such privileges and immunities shall be accorded to them for the entire period between arrival on and departure from the territory of the inspected State Party,

and thereafter with respect to acts previously performed in the exercise of their official functions.

- (a) The members of the inspection team shall be accorded the inviolability enjoyed by diplomatic agents pursuant to Article 29 of the Vienna Convention on Diplomatic Relations of 18 April 1961.
- (b) The living quarters and office premises occupied by the inspection team carrying out inspection activities pursuant to this Treaty shall be accorded the inviolability and protection accorded to the premises of diplomatic agents pursuant to Article 30, paragraph 1, of the Vienna Convention on Diplomatic Relations.
- (c) The papers and correspondence, including records, of the inspection team shall enjoy the inviolability accorded to all papers and correspondence of diplomatic agents pursuant to Article 30, paragraph 2, of the Vienna Convention on Diplomatic Relations. The inspection team shall have the right to use codes for their communications with the Technical Secretariat.
- (d) Samples and approved equipment carried by members of the inspection team shall be inviolable subject to provisions contained in this Treaty and exempt from all customs duties. Hazardous samples shall be transported in accordance with relevant regulations.
- (e) The members of the inspection team shall be accorded the immunities accorded to diplomatic agents pursuant to Article 31, paragraphs 1,2 and 3, of the Vienna Convention on Diplomatic Relations.
- (f) The members of the inspection team carrying out prescribed activities pursuant to this Treaty shall be accorded the exemption from dues and taxes accorded to diplomatic agents pursuant to Article 34 of the Vienna Convention on Diplomatic Relations.
- (g) The members of the inspection team shall be permitted to bring into the territory of the inspected State Party, without payment of any customs duties or related charges, articles for personal use, with the exception of articles the import or export of which is prohibited by law or controlled by quarantine regulations.
- (h) The members of the inspection team shall be accorded the same currency and exchange facilities as are accorded to

representatives of foreign Governments on temporary official missions.

- (i) The members of the inspection team shall not engage in any professional or commercial activity for personal profit on the territory of the inspected State Party.

36. When transiting the territory of non-inspected States Parties, the members of the inspection team shall be accorded the privileges and immunities enjoyed by diplomatic agents pursuant to Article 40, paragraph 1, of the Vienna Convention on Diplomatic Relations. Papers and correspondence, including records, and samples and approved equipment, carried by them, shall be accorded the privileges and immunities set forth in paragraph 62 (c) and (d).

37. Without prejudice to their privileges and immunities the members of the inspection team shall be obliged to respect the laws and regulations of the inspected State Party and, to the extent that is consistent with the inspection mandate, shall be obliged not to interfere in the internal affairs of that State. If the inspected State Party considers that there has been an abuse of privileges and immunities specified in this Protocol, consultations shall be held between the State Party and the Director-General to determine whether such an abuse has occurred and, if so determined, to prevent a repetition of such an abuse.

38. The immunity from jurisdiction of members of the inspection team may be waived by the Director-General in those cases when the Director-General is of the opinion that immunity would impede the course of justice and that it can be waived without prejudice to the implementation of the provisions of this Treaty. Waiver must always be express.

39. Observers shall be accorded the same privileges and immunities accorded to inspectors pursuant to this section, except for those accorded pursuant to paragraph 35 (d).

Points of Entry

40. Each State Party shall designate the points of entry and shall supply the required information to the Technical Secretariat not later than 30 days after this Treaty enters into force for it. These points of entry shall be such that the inspection team can reach any inspection area in the State Party's territory or any other place under its jurisdiction or control from at least one point of entry within 12 hours. Locations of points of entry shall be provided to all States Parties by the Technical Secretariat.

41. Each State Party may change the points of entry by giving notice of such change to the Technical Secretariat. Changes shall become effective 30 days after the Technical Secretariat receives such notification to allow appropriate notification to all States Parties.

42. If the Technical Secretariat considers that there are insufficient points of entry for the timely conduct of inspections or that changes to the points of entry proposed by a State Party would hamper such timely conduct of inspections, it shall enter into consultations with the State Party concerned to resolve the problem.

Arrangements for Use of Non-scheduled Aircraft

43. For conducting inspections as well as in cases where timely travel is not feasible using scheduled commercial transport, an inspection team may need to utilize non-scheduled flights arranged by the Technical Secretariat. Not later than 30 days after this Treaty enters into force for it, each State Party shall inform the Technical Secretariat of the standing diplomatic clearance number for non-scheduled aircraft transporting inspection teams and equipment necessary for inspection into and out of the territory in which an inspection area is located. Aircraft routings to and from the designated point of entry shall be along established international airways that are agreed upon between the States Parties and the Technical Secretariat as the basis for such diplomatic clearance.

44. When a non-scheduled aircraft is used, the Technical Secretariat shall provide the inspected State Party with a flight plan, through the National Authority, for the aircraft's flight from the last airfield prior to entering the airspace of the State in which the inspection site is located to the point of entry, not less than six hours before the scheduled departure time from that airfield. Such a plan shall be filed in accordance with the procedures of the International Civil Aviation Organisation applicable to civil aircraft. The Technical Secretariat shall include in the remarks section of each flight plan the standing diplomatic clearance number and the appropriate notation identifying the aircraft as an inspection aircraft.

45. Not less than three hours before the scheduled departure of the inspection team from the last airfield prior to entering the airspace of the State in which the inspection is to take place, the inspected State Party shall ensure that the flight plan filed in accordance with paragraph 44 is approved so that the inspection team may arrive at the point of entry by the estimated arrival time.

46. Where necessary the leader of an inspection team and a representative of the inspected State Party shall agree on a basing area

and a flight plan from the point of entry to the basing area for aircraft used to transport the inspection team and its equipment to the inspection area, and/or to support the activities of the inspection team in the inspection area including overflights of the inspection area in accordance with the provisions of paragraphs 90 to 97.

47. The inspected State Party shall provide parking, security protection, servicing and fuel as required by the Technical Secretariat for the aircraft of the inspection team at the point of entry and in the basing area. Such aircraft shall not be liable for landing fees, departure tax, and similar charges. The Technical Secretariat shall bear the cost of such fuel, security protection and servicing.

Approved Inspection Equipment

48. Subject to paragraph 51, there shall be no restriction by the inspected State Party on the inspection team bringing into the inspection area such equipment, approved in accordance with paragraph 49 which the Technical Secretariat has determined to be necessary to fulfil the inspection requirements. The Technical Secretariat shall prepare and, as appropriate, update a list of approved equipment, which may be needed for the purposes described above, and regulations governing such equipment which shall be in accordance with this Protocol. Each State Party may submit proposals on equipment for conducting inspections to be included in the list. The list of approved equipment shall be considered and approved by the Conference.

49. The equipment shall be in the custody of the Technical Secretariat and be designated, calibrated as required and approved by the Technical Secretariat. The Technical Secretariat shall, to the extent possible, select that equipment which is specifically designed for the specific kind of inspection required. Designated and approved equipment shall be specifically protected against unauthorised alteration.

50. The inspection team may also use equipment made available by a State Party for a specific on-site inspection. Such equipment shall be designated, calibrated as required and approved by the Technical Secretariat in accordance with paragraph 49.

51. The inspected State Party shall have the right, without prejudice to the prescribed time-frames, to check that the equipment is in conformity with the standard approved equipment in the presence of inspection team members at the point of entry, i.e., to check the identity of the equipment brought in or removed from the territory of the inspected State Party. To facilitate such identification, the Technical

Secretariat shall attach documents and devices to authenticate its designation and approval of the equipment. The inspection of the equipment shall also ascertain to the satisfaction of the inspected State Party that the equipment meets the description of the approved equipment for that particular phase of the inspection. The inspected State Party may exclude equipment without the above-mentioned authentication documents and devices. Procedures for the inspection of equipment shall be considered and approved by the Conference.

52. In cases where the inspection team finds it necessary to use equipment available in the inspection area not belonging to the Technical Secretariat and requests the inspected State Party to enable the team to use such equipment, the inspected State Party shall comply with the request to the extent it can.

Part 3: Request for and Notification of an On-Site Inspection

Inspection Requests

53. The request for an inspection to be submitted to the Executive Council and the Director-General shall contain at least the following information:

- (a) The State Party to be inspected;
- (b) The phase of the on-site inspection to be carried out;
- (c) The location, size and nature of the inspection area;
- (d) The nature and circumstances of the possible nuclear weapon test explosion or other nuclear explosion carried out contrary to Article I of the Treaty, including at least
 - (1) The estimated time of occurrence with indication of possible error;
 - (2) The estimated geographical coordinates of the place of the possible event with indication of possible error;
 - (3) The probable environment (i.e. underground, underwater, in the atmosphere);
- (e) All appropriate information upon which the request is based.
- (f) The name of the observer of the requesting State Party.

In the case of a request for an inspection of an area beyond the control or jurisdiction of any State, the inspection request shall contain at least the information in sub-paragraphs (b) to (f) of this paragraph.

54. The requesting State Party shall designate location of the inspection area as specifically as possible using geographic co-ordinates.

If possible, the requesting State Party shall also provide a map indicating the inspection area.

55. The area to be inspected shall be a continuous area, not exceeding 1,000 km² or a distance of 50 km in any direction.

Notifications

56. Notifications made by the Director-General pursuant to paragraph 51 of Article V of the Treaty shall include the following information:

- (a) The result of Executive Council consideration;
 - (b) The point of entry to be used by the inspection team;
 - (c) The date and estimated time of arrival of the inspection team at the point of entry;
 - (d) The means of arrival at the point of entry;
 - (e) The location, designated by geographic coordinates, of the area to be inspected;
 - (f) The names of the inspectors and/or inspection assistants;
 - (g) If appropriate, aircraft clearance for special flights;
 - (h) Types of planned activity of an inspection team in the inspection area;
 - (i) The list of equipment to be used in the inspection;
 - (j) A list of the equipment to be transported from the point of entry to the inspected area; and
 - (k) A list of any equipment which the inspection team desires to be made available to it in the inspection area.
- (1) The name and details of the observer of the requesting State Party, as applicable.

57. The inspected State Party shall acknowledge the receipt of a notification by the Director-General of an intention to conduct an inspection, not later than 1 hour after receipt of such notification.

Part 4: Pre-Inspection Activities

Preparations

58. Technical preparation for conducting an on-site inspection and facilitating the activities of an inspection team shall be carried out by the Technical Secretariat under the direction of the Director-General. The Director-General shall assume responsibility for the activities of an inspection team, its security and the protection of classified information.

59. The Director-General shall determine the size of the inspection team and select its members from personnel and experts of the Technical Secretariat designated as inspectors and inspection assistants on the maintained list, taking into account the circumstances of a particular request. In addition, members of the inspection team may include other personnel or experts designated as inspectors or inspection assistants when, in the view of the Director-General, expertise not available in the Technical Secretariat or other assistance is required. The size of the inspection team shall be kept to the minimum necessary for the proper fulfilment of the inspection mandate. No national of the requesting State Party or the inspected State Party shall be a member of the inspection team. The inspection team shall be headed by an authorised representative of the Director-General.

Entry into the Territory of the Inspected State Party and Transfer to the Inspection Area

60. The inspected State Party which has been notified of the arrival of an inspection team, shall ensure its immediate entry into the territory and shall through an in-country escort or by other means do everything in its power to provide assistance and to ensure the safe conduct of the inspection team, the approved equipment specified in paragraphs 48 through 52 and baggage from the point of entry to the inspection area not later than 24 hours after arrival at the point of entry.

61. Pursuant to paragraph 51, the inspected State Party shall have the right to check the equipment of the inspection team at the point of entry. That inspection shall be completed within the time-frame specified in paragraph 60.

Administrative Arrangements

62. The inspected State Party shall provide or arrange for the amenities necessary for the inspection team such as communication means, interpretation services to the extent necessary for the performance of interviewing and other tasks, transportation, working space, lodging, meals, and medical care. In this regard, the inspected State Party shall be reimbursed by the Organisation for such costs incurred by the inspection team.

63. The inspected State Party shall designate a representative or representatives for interaction with an inspection team.

Pre-Inspection Briefing and Inspection Plan

64. Upon arrival at the point of entry, the inspection team shall be briefed by the inspected state Party representatives, with the aid of

maps and other documentation as appropriate, on the inspection area, activities carried out and/or facilities present there, on safety and confidentiality issues, and on logistic arrangements for the inspection. The inspected State party shall indicate if appropriate sensitive locations within the inspection area that are not related to the purpose of the inspection and shall notify the inspection team of any managed access areas designated in accordance with paragraphs 81 to 84.

65. After the pre-inspection briefing, the inspection team may modify as appropriate the initial inspection plan. The inspection plan shall be made available to the representatives of the inspected State Party.

Verification of Location

65. To help establish that the inspection area to which the inspection team has been transported corresponds to the inspection area specified by the requesting State Party, the inspection team shall have the right to use approved position-finding equipment and to have such equipment installed according to its directions. The inspection team may verify its location by reference to local landmarks identified from maps. The inspected State Party shall assist the inspection team in this task.

Part 5: Conduct of Inspections

General Rules

67. The members of the inspection team shall discharge their functions in accordance with the provisions of this Treaty and its Protocol, and the procedures elaborated in the operational annual for on-site inspection. The inspection team shall strictly observe the inspection mandate issued by the Director-General in accordance with paragraph 54 of Article V. It shall refrain from activities going beyond this mandate.

68. The activities of the inspection team shall be so arranged as to ensure the timely and effective discharge of its functions and the least possible inconvenience to the inspected State party and disturbance to the area inspected.

69. In carrying out the inspection in accordance with the inspection mandate, the inspection team shall use only those methods necessary to provide sufficient relevant facts to clarify the concern about possible non-compliance with Article I, and shall refrain from activities not relevant thereto. It shall collect and document such facts as are related to the possible non-compliance, but shall neither seek nor document information which is clearly not related to non-compliance, unless the inspected State Party expressly requests it to do so. Any material collected

and subsequently found not to be relevant shall be returned to a representative of the inspected State Party.

70. The inspection team shall be guided by the principle of conducting the inspection in the least intrusive manner possible, consistent with the effective and timely accomplishment of its mission. Wherever possible, it shall begin with the least intrusive procedures it deems acceptable and proceed to more intrusive procedures only as it deems necessary.

71. Inspectors shall have the right to request clarifications in connection with ambiguities that arise during an inspection. Such requests shall be made promptly through the representative of the inspected State Party. The representative of the inspected State Party shall provide the inspection team, during the inspection, with such clarification as may be necessary to remove the ambiguity.

72. In the performance of their duties on the territory of an inspected State Party, the members of the inspection team shall, if the inspected State Party so requests, be accompanied by representatives of the inspected State party, but the inspection team must not thereby be delayed or otherwise hindered in the exercise of its functions.

73. The total number of inspectors and inspection assistants present on the territory of the inspected State Party at any given time should not as a rule exceed 30 persons.

74. The representatives of the inspected State Party shall have the right to observe all verification activities carried out by the inspection team.

75. The inspected State Party shall receive copies of the information and data gathered in the inspection area.

Communications

76. Inspectors shall have the right at all times during the on-site inspection to communicate with the Headquarters of the Technical Secretariat. For this purpose they may use their own, duly certified, approved equipment and may request that the inspected State Party provide them with access to other telecommunications if available. The inspection team shall have the right to use its own radio communications system between members of the inspection team.

On-Site Inspection Verification Activities

77. For the conduct of a short phase of an on-site inspection, the inspection team shall have the right to carry out the following verification activities within the inspection area:

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- (a) Position finding and topographic mapping from the air and on the surface;
 - (b) Visual observation, video/photographic imaging and multi-spectral including infrared measurements and imaging from and under the surface and from the air;
 - (c) Measurement of radiation and levels of radioactivity utilising gamma radiation monitoring and energy resolution analysis, and collection of radionuclides by means of environmental sampling, in the atmosphere, on the surface, underground including in wells, shafts and mine workings but excluding the use of drilling, and under water; and
 - (d) Passive seismological measurements and monitoring for aftershocks.

For the conduct of an extended phase of an on-site inspection, the inspection team shall have the right to carry out the following verification activities within the inspection area:

- (a) All activities permitted during a short phase of an on-site inspection;
- (b) In addition to the activities in sub-paragraph (a) of this paragraph, seismological measurements, radioactivity measurements and radionuclide collection through the use of surface-based equipment which is unattended;
- (c) Active seismic measurements, ground penetrating radar measurements, magnetic measurements, gravitational measurements, thermal measurements, soil resistivity and conductivity measurements;
- (d) Environmental sampling and analysis to detect geochemical anomalies;
- (e) Drilling to obtain radioactive samples.

Access Regime

78. Pursuant to paragraph 53 of Article V, the inspection team shall have the right to access to the inspection area and specific sites therein, subject only to the exceptions and operational procedures set out in the paragraphs 79 to 97. Overflights of the inspection area shall be conducted in accordance with the provisions of paragraphs 90 to 97.

79. The inspected State Party shall provide access within the inspection area as soon as possible, but in any case not later than 24

hours after the arrival of the inspection team at the point of entry. The extent and nature of access to a particular location or site within the inspection area shall be negotiated between the inspection team and the inspected State Party on a managed access basis in accordance with this Section.

80. In meeting the requirement to provide access as specified in paragraph 79, the inspected State Party shall be under the obligation to allow the greatest degree of access, taking into account any constitutional obligations it may have with regard to proprietary rights or searches and seizures. The inspected State Party has the right, pursuant to managed access provisions, to take such measures as are necessary to protect national security. The provisions in this paragraph may not be invoked by the inspected State Party to conceal evasion of its obligations not to engage in activities prohibited under this Treaty.

Managed Access

81. The inspected State Party shall have the right to designate, for either phase of an on-site inspection, locations or sites within the inspection area as managed access areas.

82. The inspection team shall be notified by the inspected State Party without delay of any managed access areas which shall be defined by geographic coordinates and with the aid of maps. Without prejudice to the right of the inspected State Party to designate a managed access area at any time during either phase of an on-site inspection, such notification shall as a rule be provided by the inspected State Party to the inspection team at the pre-inspection briefing pursuant to paragraph 64. All managed access areas notified to the inspection team during the course of the inspection shall be counted against the limits set out in paragraph 83.

83. Each location or site designated as a managed access area shall be a continuous area separate from any other managed access area. Each managed access area shall not exceed an area of 2.5 km². The total area of managed access areas shall not exceed 5 per cent of the total inspection area unless the total inspection area is less than 200 km², whereupon the total area which may be designated as managed access areas shall not exceed 10 km². The distance between managed access areas shall be such as to allow the inspection team to move as freely as possible and to conduct verification activities in accordance with paragraph 55 in areas located between managed access areas, but shall in any case not be less than a distance of 50 meters.

84. In the event that the total area of managed access areas designated by the inspected State Party is found by the inspection team to exceed the limits in paragraph 83, the inspection team and the inspected State Party shall reach agreement of which localities or sites which shall remain as designated managed access areas subject to the limits in paragraph 83.

85. The inspection team and the inspected State Party shall as necessary negotiate the modalities of access, within the timeframe of the inspection set out in paragraph 56 of Article V, to each location or site designated as a managed access area, including:

- (a) The entry/exit points to be used for access to the managed access area;
- (b) The extent and timing of access to the managed access area and to particular places within the area;
- (c) The particular inspection activities, including sampling, to be conducted by the inspection team;
- (d) The approved equipment to be used by members of the inspection team;
- (e) The numbers of inspectors and inspection assistants to be given access to the managed access area and to particular places within the area;
- (f) The performance of particular activities by the inspected State Party;
- (g) The provision of particular information by the inspected State Party.

86. During either phase of an on-site inspection, the inspected State Party shall have the right to take measures to protect sensitive installations, in particular with regard to access by the inspection team to any building to prevent disclosure of confidential information and data not related to this Treaty. Such measures may include, *inter alia*:

- (a) Removal of sensitive papers from office spaces;
- (b) Shrouding of sensitive displays, stores, and equipment;
- (c) Shrouding of sensitive pieces of equipment, such as computer or electronic systems;
- (d) Logging off of computer systems and turning off of data indicating devices;
- (e) Restriction of sampling and analysis of samples to solely determine the presence or absence of radionuclides relevant to the purpose of the inspection;

- (f) Using random selective access techniques whereby the inspectors are requested to select a given percentage or number of buildings of their choice to inspect; the same principle can apply to the interior and content of buildings;
- (g) In exceptional cases, giving only individual inspectors access to a building or parts thereof.

87. The inspected State Party shall make every reasonable effort to demonstrate to the inspection team that any sensitive installation or building to which access by the inspection team has been restricted pursuant to paragraph 86, was not used for purposes related to possible non-compliance with Article I.

88. During a short phase of an on-site inspection, the inspected State Party shall have the right, in addition to that set out in paragraph 86, to exempt from access by members of the inspection team the interior of any building. The inspected State Party shall make every reasonable effort to demonstrate to the inspection team that a nuclear weapon test explosion or any other nuclear explosion was not carried out within or below a building to which the inspection team has been excluded. This may be accomplished by means of, inter alia, at the discretion of and subject to such conditions the inspected State Party considers necessary, a visual inspection of the interior of the building or allowing transit by members of the inspection team through the building to obtain access to any shaft, tunnel or other underground space below or connected to the building.

89. The inspected State shall have the right to exclude the observer of the requesting State Party from any designated managed access area or place therein or from any sensitive installation or building within the inspection area. The inspection team shall record any such exclusion in its report.

Overflights

90. Subject to the provisions of paragraphs 91 to 97, the inspection team shall have the right to conduct overflights of the inspection area to carry out verification activities in accordance with paragraph 77 for the purpose of narrowing the area to be inspected and optimising the conduct of ground-based inspection activities.

91. Overflights may be carried out by means of aircraft, helicopters and remotely piloted aerial vehicles chartered by the Technical Secretariat or made available to it for that purpose, Aircraft, helicopters or other aerial vehicles used to conduct overflights may be flown or

perated by inspectors and/or inspection assistants. Subject to agreement between the inspection team and the inspected State Party, they may also be flown or operated by personnel made available by the inspected State Party or other personnel.

92. The inspected State Party may, at the point of entry, check the aircraft, helicopter, or other aerial vehicle named in paragraph 91 to ensure that it is equipped in conformity with the approved equipment for that phase of an inspection. Such checking shall be completed within the timeframe specified in paragraph 52 of Article V, and shall not further delay the inspection team's arrival at the inspection area and the commencement of the inspection.

93. Not less than 6 hours prior to conducting an overflight the head of an inspection team shall submit to the representative of the inspected State Party a flight plan including the verification activities to be carried out during the overflight specified in paragraph 90. The flight plan for an initial overflight may be submitted to the inspected State Party at the pre-inspection briefing pursuant to paragraph 64. The representative of the inspected State party can request to change the flight plan to exclude obtaining sensitive information by the inspection team. Subject to the provisions of paragraph 94, the head of the inspection team shall change the flight plan to avoid overflight of a designated managed access area of which the inspection team has been notified pursuant to paragraph 82 prior to or within one hour of submission of the flight plan.

94. Where it is necessary to overfly a managed access area in order to conduct a overflight of another part of the inspection area not designated as a managed access area, the head of the inspection team and the representative of the inspected State Party shall agree on measures to ensure that verification activities conducted in the course of the overflight are not carried out during transit over the designated managed access area.

95. Subject to safety considerations, overflights of the inspection area shall as a rule be carried out at low altitudes and shall adhere strictly to the flight plan.

96. The inspected State Party shall have the right to exclude the observer of the requesting State Party from travelling in an aircraft or helicopter conducting an overflight. The inspection team shall record any such exclusion in its report.

97. The inspected State Party has the obligation to make arrangements for overflights to originate within its territory and from a basing area within or as close as possible to the inspection area. The representative of the inspected State Party and the head of the inspection team shall agree on flight paths to be followed for flights between the inspection area and any basing area outside the inspection area.

Conduct of Inspections in Areas not under the Jurisdiction or Control of any State

98. In case of an inspection of an area not under the jurisdiction or control of any State the Director-General after consultation with States Parties shall select points of entry appropriate for a timely arrival of an inspection team in the inspection area and basing points for the conduct of the inspection.

99. The Director-General shall notify a State Party which has agreed to assist the inspection team in carrying out the inspection not less than 12 hours before the planned arrival of the inspection team at a point of entry located in territory under its jurisdiction or control.

100. States Parties on whose territory the points of entry and basing points are located shall assist in transporting the inspection team, its equipment and baggage to the inspection area as well as in conducting an inspection. The Organisation shall reimburse assisting State Parties for all costs incurred.

101. Each assisting State Party shall designate a representative or representatives for interaction with an inspection team.

102. Subject to the approval of the Executive Council, the Director-General may negotiate standing arrangements with States Parties, including for the pre-positioning of approved and designated equipment, to facilitate assistance by States Parties in the event of an on-site inspection in an area not under the jurisdiction or control of any State.

Collection, Handling and Analysis of Samples

103. The inspection team may take samples from the inspected area.

104. Where possible the analysis of samples shall be performed on-site. The inspection team shall have the right to perform on-site analysis of samples using approved equipment brought by it. At the request of the inspection team, the inspected State Party shall, in accordance with agreed procedures, provide assistance for the analysis of samples on-site.

105. The inspected State Party has the right to retain portions of all samples taken in the on-site inspection area by the inspection team or take duplicate samples and be present when samples are analysed on-site.

106. The inspection team shall, if it deems necessary, transfer samples for analysis off-site at laboratories designated by the Organisation.

107. The Director-General shall have the primary responsibility for the security, integrity and preservation of samples and for ensuring that the confidentiality of samples transferred for analysis off-site is protected. The Director-General shall do so in accordance with procedures, to be considered and approved by the Conference, for inclusion in the Operational manual for On-Site Inspections. He or she shall:

- (a) Establish a stringent regime governing the collection, handling, transport and analysis of samples;
- (b) Certify the laboratories designated to perform different types of analysis;
- (c) Oversee the standardisation of equipment and procedures at these designated laboratories, mobile analytical equipment and procedures, and monitor quality control and overall standards in relation to the certification of these laboratories, mobile equipment and procedures; and
- (d) Select from among the designated laboratories those which shall perform analytical or other functions in relation to specific investigations.

108. When off-site analysis is to be performed, samples shall be analysed in at least two designated laboratories. The Technical Secretariat shall ensure the expeditious processing of analysis. The samples shall be accounted for by the Technical Secretariat and any unused samples or portions thereof shall be returned to the Technical Secretariat.

109. The Technical Secretariat shall compile the results of the laboratory analysis of samples relevant to compliance with this Treaty and include them in the inspection report. Technical Secretariat shall include in the report detailed information concerning the equipment and methodology employed by the designated laboratories.

Observers

110. In accordance with the provisions of paragraph 60 of Article V, the requesting State shall liaise with the Technical Secretariat to co-

ordinate the arrival of the observer at the point of entry as the inspection team within a reasonable period of the inspection team's arrival.

111. The observer shall have the right throughout the period of inspection to be in communication with the embassy of the requesting State Party located in the inspected State Party or, in the case of absence of an embassy, with the requesting State Party itself.

112. The observer shall have the right to arrive at the inspection area and to have access to the inspection area as granted by the inspected State Party.

113. Throughout the inspection, the inspection team shall keep the observer informed about the conduct of the inspection and the findings.

114. At all times during the on-site inspection, the inspected State Party shall provide or arrange for the amenities necessary for the observer similar to those enjoyed by the inspection team as described in paragraph 40. All costs in connection with the stay of the observer on the territory of the inspected State Party shall be borne by the requesting State Party.

Post-Inspection Briefing

115. Upon completion of an inspection the inspection team shall meet with representatives of the inspected State Party to review the preliminary findings of the inspection team and to clarify any ambiguities. The inspection team shall provide to the representatives of the inspected State Party its preliminary findings in written form, together with a list of any samples and other material to be taken off-site. The document shall be signed by the head of the inspection team. In order to indicate that he or she has taken notice of the contents of the document, the representative of the inspected State Party shall countersign the document. The meeting shall be completed not later than 24 hours after the completion of the inspection.

Departure

116. Upon completion of the post-inspection procedures, the inspection team and the observer shall leave, as soon as possible, the territory of the inspected State Party. The inspected State Party shall do everything in its power to provide assistance and to ensure the safe conduct of the inspection team, its equipment and baggage to the point of exit.

Reports

117. Not later than 72 hours after the completion of the inspection, the inspectors shall complete a factual preliminary report on the activities

conducted by them and on their findings. It shall only contain facts relevant to compliance with this Treaty, as provided for under the inspection mandate. The report shall also provide information on and an assessment of the degree and nature of access and cooperation granted by the inspected State Party for the satisfactory implementation of the on-site inspection. Differing observations made by inspectors may be attached to the report.

118. Not later than 14 days after the completion of the inspection, the inspectors shall complete a final report on the activities conducted by them and on their findings. It shall conform with the requirements of paragraph 117 and shall include results of sample analysis in designated laboratories and data received by the International Monitoring System.

119. On completion, reports shall be submitted without delay to the Director-General who shall promptly transmit it to the requesting State Party, to the inspected State Party, to the Executive Council and to all other States Parties.

III. Associated Measures

120. Pursuant to paragraph 68 of Article V, each State Party shall exercise its best endeavours in providing the Organisation with notification of any explosion using 300 tonnes or greater of TNT-equivalent blasting material detonated as a single explosion anywhere on its territory, or at any place under its jurisdiction or control. If possible, such notification will be provided in advance. The notification should include full details on location, time, quantity and type of explosive used, and on the configuration and intended purpose of the blast. The State Party concerned shall expeditiously provide the Technical Secretariat, on its request, with the opportunity to visit the site of the detonation at a mutually-convenient time.

121. Each State Party shall also exercise its best endeavours upon the entry into force of the Treaty to provide to the Technical Secretariat, and at annual intervals thereafter to update, information relating to its national use of non-nuclear explosions greater than 300 tonnes TNT-equivalent. In particular, the State Party shall advise:

- (a) The geographic locations of sites where the explosions originate;
- (b) The nature of activities producing them and the general profile and frequency of such explosions; and,

- (c) Any other relevant detail, if available (including details of the location, timing, and configuration of detonation, as well as quantities of explosives used); and,

assist the Technical Secretariat, on its request, in clarifying the origins of any event detected by the International Monitoring System, including by reference to national records and by extending to the Technical Secretariat, on its request, the opportunity to visit particular sites and to confirm with the State Party concerned particular details of its declarations.

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TOWARDS A NUCLEAR-TEST BAN (APRIL, 1991)

Background

There are five declared nuclear weapon states in the world today. The United States was the first to conduct a nuclear weapon test, in 1945, followed by the Soviet Union in 1949, the United Kingdom in 1952, France in 1960 and China in 1964. In 1974 India carried out an underground explosion of a nuclear device, stating that the explosion took place for peaceful purposes only.

Tests are conducted to develop and refine the design of nuclear weapons and to check their reliability.

From 1945 until the end of 1989 a total of 1,818 nuclear explosions were carried out in all environments in the atmosphere, in outer space, underwater and underground 921 by the United States, 643 by the Soviet Union, 177 by France, 42 by the United Kingdom, and 31 by China. India carried out a nuclear explosion in 1974.*

The unprecedented scale of destructiveness of the two bombs that exploded over Hiroshima and Nagasaki in August 1945 (200,000 persons died within the first five months, another 100,000 were injured, and an indeterminate number were victims of long-term radiation effects) and the hazardous radioactive fall-out from tests, particularly atmospheric tests carried out in the 1950s, caused mounting concern throughout the world. A number of incidents around testing sites increased the international community's awareness of the spread of radioactive nuclear fall-out and of the mechanisms by which radioactive substances are transferred to body tissues through the food chain. The United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR),

* *SIPRI Yearbook, 1990* (covering the period up to the end of 1989), p. 57.

which was set up in 1955, concluded that the only way to prevent the danger of hazardous radioactive fall-out was to ban all nuclear-test explosions. A ban on the testing of nuclear weapons was suggested, either as an independent measure or as one element in an agreement on more comprehensive measures of disarmament.

In the following decades, discussions on—and sometimes negotiations on—limiting nuclear tests and the pursuit of a comprehensive test ban have been held in various forums: at the trilateral Conference on the Discontinuance of Nuclear Weapon Tests in Geneva, held from 1958 to 1962, which involved the Soviet Union, the United Kingdom and the United States; in the Eighteen-Nation Committee on Disarmament in Geneva and its successor bodies for disarmament negotiations (today known as the Conference on Disarmament); at the trilateral negotiations from 1977 to 1980 between the Soviet Union, the United States and the United Kingdom; at the General Assembly of the United Nations at its regular sessions and at its three special sessions devoted to disarmament. Bilateral negotiations between the Soviet Union and the United States on nuclear testing that began in November 1987 with the aim of reaching agreement, as a first step, on verification measures to make possible the ratification of the 1974 and 1976 test-limitation Treaties, have resulted in the signing of new verification protocols in June 1990.

The Partial Test Ban

By the end of 1956, the different approaches of States to the issue of a ban on nuclear testing had become quite clear: the Soviet Union and India advocated an early and separate agreement on a ban on all nuclear tests without international verification, maintaining that no significant testing could go undetected; Yugoslavia, representing the view of an emerging group of non-aligned States, urged an agreement with such control as might prove necessary; and the Western countries regarded the limitation of and eventual ban on nuclear testing, with adequate verification, as part of a comprehensive disarmament process.

Following a conference of experts from Eastern European and Western States held in 1958, which concluded that it would be technically feasible to establish a workable and effective control system to detect violations of an eventual agreement on the suspension of nuclear tests, the Soviet Union, the United Kingdom and the United States began negotiations on a test ban in Geneva (the Conference on the Discontinuance of Nuclear Weapon Tests). They also suspended their testing and maintained that voluntary ban for about three years. In the

course of the negotiations the positions of the two sides came closer than they had been at any earlier time. As a result of increased tensions in the overall relationship between the three Powers, however, the negotiations adjourned in 1962 and were not resumed. Nevertheless, the momentum that had been built upon the issue of a nuclear-test ban did not entirely dissipate.

Although differing positions on the question of on-site inspection made an underground test ban impossible, in 1963 the Soviet Union, the United Kingdom and the United States were able to agree on a partial approach, signing the Treaty banning nuclear weapon tests in the atmosphere, in outer space and under water, but not underground (partial test-ban Treaty). Hence no nuclear tests in the atmosphere, in outer space or under water have been carried out by them since 1963. It is estimated that from 1963 to the end of 1989 the United States conducted 590 underground tests, the Soviet Union 458, and the United Kingdom 19. France and China have not become parties to the Treaty. France announced in 1974 that it would refrain from conducting further atmospheric tests. Since then it has carried out 128 underground tests. China conducted its last atmospheric test in 1980; in March 1986, it confirmed that it would not conduct atmospheric tests in the future. China has conducted 11 underground tests since 1969.* By 31 January 1991, 117 States adhered to the Treaty.

The partial test-ban Treaty was the first international agreement of world-wide scope reached in the field of nuclear-arms limitation. At the time, its conclusion was hailed as an event of historic significance that marked the beginning of the curbing of the nuclear-arms race. Indeed, it helped to create a climate that facilitated negotiations for other agreements, notably the Treaty on the Non-Proliferation of Nuclear Weapons, and it has also greatly contributed to reducing radioactive pollution and to lessening international tensions.

The Threshold Test-Ban Treaty and the Peaceful Nuclear Explosions Treaty

In the partial test-ban Treaty, States parties expressed their determination to pursue further negotiations aimed at the discontinuance of all test explosions of nuclear weapons in all environments for all time. Such negotiations were held during the 1960s and 1970s at the multilateral level, in the Geneva Committee on Disarmament; at the bilateral level, between the Soviet Union and the United States; and at the trilateral level, between the Soviet Union, the United Kingdom and

* *SIPRI Yearbook, 1990* (covering the period up to the end of 1989), p. 57.

the United States. The major obstacle in all those negotiations continued to be the question whether a total ban on testing could be adequately verified and whether verification would require on-site inspection.

As a result of their bilateral negotiations on the banning of all nuclear testing, the Soviet Union and the United States, in 1974, signed the Treaty on the Limitation of Underground Nuclear Weapon Tests, commonly referred to as the threshold test-ban Treaty. This Treaty prohibits any underground nuclear weapon test having a yield in excess of 150 kilotons and restricts testing to specified areas. Each party agreed to use its national technical means of verification and not to interfere with the means of verification of the other party. The parties also agreed to exchange information necessary to improve the assessments of the yields of explosions. The threshold test-ban Treaty does not, however, cover underground nuclear explosions for peaceful purposes. Negotiations continued, therefore, on this question.

In 1976 the two States signed the Treaty on Underground Nuclear Explosion for Peaceful Purposes. This Treaty regulates the explosions which they may conduct outside their nuclear weapon-test sites and which may, therefore, be presumed to be of peaceful purposes. To ensure that explosions announced as peaceful would not provide weapon-related benefits that could not be obtained from weapon-testing prohibited by the threshold test-ban Treaty, the new Treaty established the same yield threshold for explosions for peaceful applications as that which had been imposed on weapon tests, namely, 150 kilotons. Any group explosion is also limited to 150 kilotons unless each of its individual explosions can be identified and each yield determined to be not more than 150 kilotons, and the aggregate yield does not exceed 1.5 megatons. In a Protocol containing specific operational arrangements, the two parties committed themselves to provide detailed information on their explosions for peaceful purposes and even to permit designated personnel of the other party to come within the area of explosion for observation purposes. Those provisions were considered as representing a significant advance in verification procedures.

Following further negotiations and agreement on two protocols detailing verification arrangements for the two treaties, both were ratified by the Soviet Union and the United States and entered into force on 11 December 1990.

Bilateral Negotiations

In connection with a new round of negotiations on nuclear and space arms, the Soviet Union and the United States, in 1986, began

substantive discussions on issues related to nuclear testing. Full-scale stage-by-stage negotiations on nuclear testing began in November 1987. The United States and the Soviet Union stated that, as a first step in their negotiations, they would agree upon effective verification measures which would make it possible to ratify the 1974 threshold test-ban Treaty and the 1976 peaceful nuclear explosions Treaty, and then proceed to negotiating further intermediate limitations leading to the ultimate objective of the complete cessation of nuclear testing as part of an effective disarmament process. Among other things, this process would pursue, as its first priority, the reduction of nuclear weapons and, ultimately, their elimination. In implementing the first objective of these negotiations agreement on effective verification measures for the threshold test-ban Treaty the two sides agreed to design and conduct a joint verification experiment at each other's test sites.

Accordingly, in 1988 the Soviet Union and the United States carried out joint verification experiments at their respective test sites in Semipalatinsk and Nevada, comparing hydrodynamic verification equipment directly on site and seismometric verification instruments at different off-site locations.

At the heart of the present discussions and the joint test measurement experiment is the question. To what extent do off-site seismic measuring devices need to be supplemented by a more intrusive on-site monitoring method? In the American view, seismometric measuring cannot replace on-site monitoring. The American side has, therefore, suggested that all nuclear-test explosions above a yield of 50 kilotons should be verified by the other party through the hydrodynamic or "CORRTEX" method, whereby a cable is inserted into a parallel shaft very close to the shaft containing the nuclear device and the explosive yield is determined by measuring the speed with which the cable is crushed. In discussion the relative merits of the hydrodynamic and seismometric methods for measuring explosive yields, Soviet experts have expressed the opinion that, although the accuracy of CORRTEX measurements can be fairly high if no special measures to distort (camouflage) the explosive yield have been taken in designing the container holding the nuclear charge, the hydrodynamic method requires more extensive and lengthy preparations than does seismic monitoring and does not result in measurements of much greater accuracy. The former method would also entail the risk of obtaining technical information not directly related to the yield of the explosion. The Soviet side has, therefore, favoured relying on seismic monitoring at a distance from the test site, possibly

supplemented by a limited number of on-site measuring operations to calibrate and assure the accuracy of the seismic techniques.

The Soviet Union and the United States consider that their joint tests of the two methods have reduced differences between them regarding the requirements for adequate measuring of underground nuclear-test explosions and have made it possible for them to agree on verification arrangements allowing for the ratification of their 1974 and 1976 Treaties. Although United States officials have stated in that context that they have not identified any further testing limits that would be in American national security interests, and that nuclear testing must continue until nuclear deterrence is no longer deemed necessary, both the United States and the Soviet Union have reaffirmed their intention to proceed with further negotiations in the step-by-step process agreed on. They have stated that those verification measures for the threshold test-ban Treaty that they have been able to agree on as a result of the joint experiments will be used, to the extent appropriate, in nuclear-test limitation agreements that they may conclude in the future.

Multilateral Discussions

Faced with continuing nuclear testing, the international community has sought, through the years, to take effective measures that would lead to a comprehensive test ban. Multilateral efforts to achieve this objective have intensified, in particular in the Conference on Disarmament and its predecessors. A number of concrete proposals, including texts for a draft treaty put forward by Sweden and by the Soviet Union, have been submitted in the course of these discussions.

In the Final Document of the first special session of the General Assembly devoted to disarmament, held in 1978, it was recognised that the cessation of nuclear weapon testing would make an important contribution to the goal of ending the qualitative improvement of nuclear weapons and the development of new types of such weapons, and of preventing their proliferation.

The divergence of views among the nuclear weapon states on the question of a comprehensive test ban has, however, made it impossible for the Geneva negotiating body to start substantive negotiations on the issue, despite numerous requests by the General Assembly.

In July 1980, for the first time since they had begun trilateral negotiations on a comprehensive test ban, in 1977, the Soviet Union, the United States and the United Kingdom reported to the Committee

on Disarmament that they had agreed that a treaty would require each party to prohibit, prevent and not carry out any nuclear weapon test explosion at any place or in any environment under its jurisdiction; that a protocol on nuclear explosions for peaceful purposes would be an integral part of a test-ban treaty, establishing a moratorium on such explosions until arrangements for conducting them had been worked out; and that national technical means of verification would be used. Each party would undertake not to interfere with such means of verification. International seismic data centres would be established in agreed locations to permit an international exchange of seismic data. The treaty would also allow a party, after stating its reasons, to request an on-site inspection for the purpose of ascertaining whether or not an event was a nuclear explosion. The three Powers concluded their report by stating that they were determined to exert their best efforts to bring the negotiations to an early and successful conclusion.

However, no further talks were held between them after the United States announced, in 1982, its decision not to resume the trilateral negotiations on a test-ban treaty. The United States held that any consideration of a complete cessation of testing must be related to the ability of Western States to maintain credible deterrent forces and, while a test ban remained an element in its full range of long-term arms control objectives, the United States did not believe that, under the current circumstances, a comprehensive test ban would help to reduce the threat of nuclear weapons or to maintain the stability of the nuclear balance.

A compromise was reached in the Committee on Disarmament in 1982, when an *ad hoc* working group was established "to discuss and define, through substantive examination, issues relating to verification and compliance with a view to making further progress towards a nuclear-test ban". China and France, however, made it known that they would not participate in the Working Group. In the course of subsequent deliberations, further treaty proposals were presented: by the Soviet Union in the General Assembly in 1982 and by Sweden in the Conference on Disarmament in 1983. Between 1984 and 1989 the Conference on Disarmament was again unable to agree on the terms of reference for a new working group, namely, a mandate to begin substantive multilateral negotiations in the Conference on Disarmament. In 1990 it found a compromise enabling it to re-establish an *ad hoc* working group to initiate substantive work on specific and interrelated test-ban issues, including the structure and scope of a treaty as well as verification and compliance.

The importance that Member States continue to attach to a comprehensive nuclear-test ban is reflected in various initiatives that they have taken.

On 6 August 1985, the Soviet Union publicly declared and put into effect a unilateral moratorium on all nuclear tests. The moratorium lasted, with four renewals, until 26 February 1987. The Soviet Union, at that time, announced its willingness to resume a moratorium if the United States would do the same.

In a document adopted in 1986 in Mexico, the members of the Six-Nation Initiative—Argentina, Greece, India, Mexico, Sweden and the United Republic of Tanzania—offered to assist in monitoring a moratorium or ban on nuclear weapon tests. They proposed that they, in co-operation with the United States and the Soviet Union, establish and operate, first on a temporary and later on a permanent basis, monitoring stations at existing test sites, and that they “internationalize” a number of selected stations in each of the two nuclear weapon countries by placing observers there.

Another approach towards concluding a comprehensive test-ban treaty was taken by a group of non-aligned countries, which, beginning in 1985, proposed that a conference be convened to consider converting the partial test-ban Treaty into a comprehensive one. The 1963 Treaty stipulates that its depositary Governments (USSR, United Kingdom and United States) must convene a conference to discuss an amendment if at least one third of the States parties request it, and that any amendment must be approved by a majority of all the parties including the three depositaries. By early in 1989, the required number of States parties (39) calling for the convening of such a conference was reached. The Soviet Union welcomed the idea of expanding the scope of the 1963 Treaty. The United Kingdom and the United States indicated that, although they would comply with the request in accordance with their duty as depositaries, they did not support the proposed conversion. Following the holding of the Meeting of the States Parties for the Organisation of the Amendment Conference in June 1990, the Conference itself was held in New York from 7 to 18 January 1991. As the Conference was unable to reach a unanimous conclusion, it adopted, by vote, a decision in which the States parties acknowledged the complex and complicated nature of certain aspects of a comprehensive test ban, especially those with regard to verification of compliance and possible sanctions against non-compliance, and expressed the view that further work needed to be undertaken. Accordingly, by the same decision the

President of the Conference was mandated to conduct consultations with a view to achieving progress on those issues and resuming the work of the Conference at an appropriate time. The decision was adopted with 74 votes in favour, two against (United Kingdom and United States), with 19 abstentions.

In 1986 and again in 1987 the General Assembly adopted resolutions by which it called on States conducting nuclear-test explosions to notify the Secretary-General, within one week of each explosion, of the time, place, yield and site characteristics of the test and also invited all other States to provide any such data on nuclear explosions that they might have. It also requested the Secretary-General to make available an annual register, based on the information provided. So far, Australia, New Zealand and the Soviet Union have furnished such information.

Over the years, in the Conference on Disarmament, members of the Group of 21 (mostly neutral and non-aligned countries) have continued to attach the utmost importance to the urgent conclusion of a comprehensive test-ban treaty as a significant contribution to the aim of ending the qualitative refinement of nuclear weapons and the development of new types of such weapons as well as of reversing the nuclear-arms race and achieving nuclear disarmament. Commenting on the negotiations between the two major nuclear weapon states on nuclear testing on a stage-by-stage basis, they reiterated their view that the existing bilateral thresholds did not preclude the modernisation of nuclear weapons and thus failed to contribute to the cessation of the qualitative development of nuclear weapons. Rather than verifying those thresholds, what was required, in their view, was that all nuclear tests be prohibited. Intermediate agreements to limit testing would have a useful purpose only if they served to curb the qualitative development of nuclear weapons and constituted steps towards the conclusion of a comprehensive test-ban treaty.

Members of the Group of Eastern European and other States continued to regard the earliest elaboration of a treaty on the complete and general prohibition of nuclear weapon tests as among the most urgent and significant measures for halting the nuclear-arms race and preventing the proliferation of nuclear weapons. They expressed their conviction that a prohibition of nuclear weapon tests was the key to halting the nuclear-arms race and to checking considerably the refinement of nuclear weapons, thus bringing closer attainment of the ultimate goal of a nuclear weapon free world.

The USSR has repeatedly stressed its continued commitment to an early achievement of a comprehensive test ban and its readiness to use all possibilities leading to the fulfilment of that objective. While pursuing with the United States full-scale stage-by-stage negotiations leading to a complete ban on nuclear testing, it has continued to support parallel efforts within the Conference on Disarmament aimed at the preparation of a multilateral treaty on the complete and general prohibition of nuclear weapon tests. The USSR has also subscribed to the idea of extending the 1963 partial test-ban Treaty to underground nuclear tests.

Throughout these years the United States has reaffirmed that a comprehensive test ban remains its long-term objective, to be achieved in the context of significant reductions in the existing arsenals of nuclear weapons, the development of substantially improved verification measures, expanded confidence-building measures and a greater balance in conventional forces. The United States has stated that it views nuclear testing issues in the broader context of national security and that, as long as it must rely on nuclear deterrence for its security and for that of its allies, testing would remain essential. In that context, the United States had not identified any further limitations on nuclear testing, beyond those now contained in the partial test ban Treaty. Against that general background it was opposed to the proposal to amend the 1963 partial test-ban Treaty. However, it has pointed to the successful completion of the joint verification experiment, and of negotiations with the Soviet Union on verification protocols to the threshold test-ban Treaty and the peaceful nuclear explosions Treaty, which have allowed for verification, and has stated that it remains committed to negotiations with the Soviet Union in the context of a step-to-step approach to ending nuclear testing. With regard to the role of the Conference on Disarmament, the United States has reaffirmed its readiness to participate in multilateral discussions on nuclear testing at the Conference under an appropriate non-negotiating mandate.

The United Kingdom has expressed the view that its security would depend for the foreseeable future on deterrence based, in part, on nuclear weapons; this would mean a continuing requirement to conduct underground nuclear tests to ensure that its nuclear weapons remained effective and up to date. The United Kingdom has welcomed the moves to ratify the threshold test ban Treaty and the peaceful nuclear explosions Treaty. It has expressed the belief that, following such ratification and as verification technology improved, and also taking account of progress in other areas of arms control, further steps to control nuclear testing

would have to be considered. Although a comprehensive test ban continued to be a long-term goal, it has remained firmly of the view that an immediate move to a comprehensive test ban would be premature even destabilising. For these reasons, among others, the United Kingdom has stated its opposition to the proposal to amend the partial test-ban Treaty in order to convert it into a comprehensive test ban.

France has maintained that international commitments in the field of nuclear testing can be considered only in the overall context of nuclear disarmament and has stressed that the cessation of nuclear weapon testing is not a pre-condition for progress towards nuclear disarmament but, on the contrary, could become significant at the end of a long-term process resulting in real and effective nuclear disarmament. France has emphasised that it could not agree to the obsolescence of its limited nuclear deterrent and that only the nuclear explosions necessary to maintain its credibility had been conducted. France has also stressed that, in the context of deep reductions of nuclear weapons, the problem of reliability of the remaining weapons could, in its view, only become more important. France has underlined that it would not stand in the way of any procedural agreements that might be reached to deal with the item in the Conference on Disarmament, but it has reaffirmed that it is not in a position to participate in work the objective of which was the negotiation of an agreement to which it could not subscribe.

China has stated that it has always stood for a comprehensive prohibition and thorough destruction of nuclear weapons, including the cessation of nuclear tests. In its opinion, the two States possessing the largest nuclear arsenals should take the lead in halting the development, production and deployment of all nuclear weapons and in drastically reducing their nuclear arsenals; China would be prepared to take corresponding measures in the process of cessation of the nuclear arms race and nuclear disarmament. China has reiterated its flexible position towards the various proposals submitted thus far on the mandate for a subsidiary body of the Conference on item 1 of its agenda. China has also reiterated that if and when agreement is reached on the mandate, enabling such a body to be established, it would participate in its work.

International Seismic Monitoring

The question of adequate verification procedures has remained one of the major problems in the multilateral consideration of a comprehensive test ban. Over the years, a number of proposals has

been made with a view to solving the issue, for example by Sweden and by the Soviet Union.

On the assumption that adequate means to deter any clandestine testing under an agreement could be provided by a global seismic monitoring system, Sweden proposed in 1975 that the Conference of the Committee on Disarmament set up, early in 1976 an *ad hoc* group of scientific experts to study this possibility.

The *Ad Hoc* Group of Scientific Experts to Consider International Co-operative Measures to Detect and Identify Seismic Events was established in 1976 with a mandate to devise a conceptual design for an international seismic data exchange system and to test its various components. The Group of Scientific Experts (GSE) is open to all member States of the Conference on Disarmament, as well as to non-member States upon request. Over the years, experts and representatives from 35 countries in all have participated in the work of *the Ad Hoc* Group.

A verification system for a comprehensive test-ban treaty would have two basic purposes: to provide confidence that other parties to the treaty are obeying their treaty obligations, and to deter parties from clandestine activities violating the treaty. A verification system must provide a high capability to detect and identify clandestine activities. It must further limit the risk of creating false alarms by misinterpreting naturally occurring events as clandestine activities. For instance, many earthquakes would be observed and would have to be confidently identified. A large number of false alarms would rapidly deteriorate the credibility of the verification system and thus of the treaty itself.

The system developed by the Group is intended to be a service to those countries which are parties to a test-ban treaty, and should provide them with easily accessible information derived from globally collected data. The judgement whether a nuclear explosion has taken place or not would be left to the individual States parties.

The first of five reports so far was submitted in 1978 and described how seismological science could be used in a co-operative international effort to develop a global seismic data exchange system. The report envisaged a network of more than 50 high-quality seismograph stations distributed world-wide and operated according to agreed procedures to produce seismic data in standard form on two levels: Level 1 with routine daily reporting of basic parameters of detected seismic signals; and Level 2 with records of waveforms provided in response to requests

for additional information. Level 1 data would be regularly exchanged using the Global Telecommunications System (GTS) of the World Meteorological Organisation (WMO) and other available means of communication. Data would be routinely compiled and processed at special International Data Centres (IDCs) for the use of participating States. The much more voluminous Level 2 data would be exchanged only for those seismic events determined by participants to be of particular interest. No processing of such data at International Data Centres was foreseen in the first report.

Over the next several years, the Group systematically defined the elements of such an international co-operative data exchange system, and elaborated its basic scientific and technical aspects. This work was supported by practical co-operative tests of parts of the proposed system. The first large-scale technical test of the Group was carried out in 1984. In this test 75 seismograph stations in 37 countries took part and a vast amount of experience was obtained on many aspects of the practical operation of a global seismic data exchange system.

In order to take advantage of the new possibilities offered by recent scientific and technological developments, in 1986 the Group proposed a modernised and upgraded system to be based on the expeditious exchange of waveform (Level 2) and parameter data (Level 1) data and the processing of such data at International Data Centres. The system would have four major components:

- A global network of more than 50 high-quality seismograph stations, including seismic arrays, each conforming to specified technical standards and operated according to internationally agreed rules.
- Government-authorized National Data Centres (NDCs) responsible for providing seismic data from national stations to IDCs.
- International Data Centres to collect and analyse seismic waveform and parameter data; to distribute, on a daily basis, bulletins with information on all observed events; and to make data and results readily accessible to all participants. For the purpose of developing IDC procedures and of facilitating testing of the global system, four Experimental International Data Centres (EIDCs) have been established in Canberra, Australia; Stockholm, Sweden; Moscow, USSR; and Washington D.C., United States.

- Telecommunication channels for the expeditious exchange of data, between National Data Centres and the International Data Centres as well as between the International Data Centres.

The Group is at present conducting a large-scale experiment to test the proposed concept. The first two stages of this experiment were carried out in 1989 and 1990.

In this experiment data are transmitted by various means of communication from the National Data Centres, one in each participating country, to the four Experimental International Data Centres. So far 27 countries have joined in the test by contributing data from in all more than 50 stations. Standardisation procedures are being used for the processing of data to determine the location, depth and other information related to the source for all detected seismic events.

In addition to a global seismological verification system, verification arrangements under a comprehensive test ban treaty might also include the monitoring of atmospheric radioactivity. A global system for the collection of airborne radioactivity could in principle be quite similar to the seismological system designed by the Group of Scientific Experts. About 100 globally distributed, technically fairly simple, air sample stations would provide data on airborne radioactivity either in the form of small particles or of radioactive gas. The data obtained would have to be analysed and compiled in specially equipped laboratories.

Satellite images of the surface of the Earth could give valuable contributions to the verification of a nuclear test ban by monitoring the infrastructure and other evidence of nuclear testing in selected areas, such as existing test sites and areas where peaceful nuclear explosions have been conducted. Another application could be to use satellite data to assist in the interpretation of seismic events which have not been confidently identified as earthquakes using seismic data. If satellite data show that an event is located in an area which lacks the infrastructure (for example roads, which would be necessary to prepare for and conduct a nuclear explosion), the possibility of a clandestine test might be excluded. Satellite data might thus prove useful in reducing the number of unidentified earthquakes and thus reduce the number of potential false alarms about clandestine tests.

On-site observations and inspections play an increasingly important role in arms control and disarmament treaties, and are likely to become of significant importance also in the context of a comprehensive test ban treaty. There are at present no seismological methods available to

distinguish chemical explosions from nuclear explosions. On-site inspections, conducted upon invitation, could be used in connection with large chemical explosions to confirm that such explosions are non-nuclear. Inspections could also be used to increase confidence that a seismic event, which might prove difficult to identify unambiguously from seismological data or satellite observations, is an earthquake and not a nuclear explosion.

A Nuclear-test ban and the Question of the Non-proliferation of Nuclear Weapons

In the preamble to the 1963 partial test-ban Treaty, the three negotiating parties—the Soviet Union, the United Kingdom and the United States—committed themselves to seek to achieve the discontinuance of all test explosions of nuclear weapons for all time, and expressed their determination to continue negotiations to that end. In the preamble to their 1974 threshold test-ban Treaty, the United States and the Soviet Union made a specific reference to that declaration of intent.

During discussions in the mid-1960s on the prevention of the further proliferation of nuclear weapons, there was a general feeling among the non-aligned members of the negotiating body in Geneva that a non-proliferation treaty should offer a balance of responsibilities and obligations between the nuclear weapon and the non-nuclear weapon states, and that it should either become apart of a wider disarmament programme or be followed by an early halt in the production of nuclear weapons and a reduction in the stockpiles of the nuclear weapon states. To meet this particular concern, the Treaty on the Non-Proliferation of Nuclear Weapons contains a provision under which each of the parties to the Treaty undertakes to pursue negotiations in good faith on effective measures 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. The Treaty also included, in the preamble, a reference to the declared intention of the parties to the 1963 partial test-ban Treaty to seek to achieve the discontinuance of all test explosions of nuclear weapons for all time and to continue negotiations to that end.

In 1995 a conference will be convened to decide whether the non-proliferation Treaty will continue in force indefinitely, or will be extended for an additional fixed period or periods. Many States support the view that a comprehensive test ban would be a significant contribution

to the non-proliferation of nuclear weapons; and some believe that, without a cessation of nuclear testing, it may not be possible to extend the NPT well beyond 1995. Other States, however, are of the opinion that the NPT, independently, offers benefits for the security of all States and, by its extension, will continue to do so.

Whatever the viewpoint, it seems clear that the issues of nuclear testing and the non-proliferation of nuclear weapons will continue to command much governmental and public attention in the years to come.

Short Glossary and Acronyms

Conference on Disarmament Known as the Committee on Disarmament between 1979 and 1983, the Conference on Disarmament is the multilate negotiating body of the international community, currently a membership of 39 States, including all five nuclear weapon states. The Conference was constituted in 1978 and held its first session in 1979, carrying on the negotiating efforts of its predecessors, the Ten-Nation Committee on Disarma (1959-1960), the Eighteen-Nation Committee on Disarmam (1962-1969), and the Conference of the Committee on Disarmament, comprising 30 Member States (1969-1978). It has a unique relationship with the United Nations. It defines its own rules of procedure and develops its own agenda, taking into account the recommendations made by the General Assembly and reports to the General Assembly annually, or more frequently, as may be appropriate. The Secretary-General of the Conference is appointed by the Secretary-General of the United Nations and acts as his personal representative. In 1979, the Committee on Disarmament agreed on a permanent agenda consisting of ten subject areas from which it adopts its annual agenda and programme of work.

CCD	Conference of the Committee on Disarmament (see Conference on Disarmament).
CORRTEX	Continuous reflectometry for radius versus time experiment.
ENDC	Eighteen-Nation Committee on Disarmament (see Conference on Disarmament).
Fission	The splitting of the atomic nuclei of certain heavy elements (such as uranium and plutonium), which results in the immediate release of great energy, as in a fission-type nuclear weapon (atomic bomb).
Fusion	The process whereby the nuclei of light elements, especially those of isotopes of hydrogen, combine to form the nucleus of a heavier element, resulting in the immediate release of great energy. This process constitutes the basis of the thermonuclear weapon (hydrogen bomb), which can be vastly more powerful than the fission-type or atomic nuclear weapon.
Kiloton	A measure of the yield of a nuclear detonation. One kiloton is equivalent to 1,000 tons of TNT. TNT is the universally used acronym for the chemical explosive trinitrotoluene.
National technical means of verification	National technical means (NTM) are devices under the control of a State that can be used for monitoring at a distance actions by another State. This includes the monitoring by one State of compliance by another State to ensure, implementation of the provisions of a treaty to which they are both parties. NTM include observation satellites, aircraft-based systems such as radios and cameras, and sea- and ground-based systems.

NPT	<p><i>Treaty on the Non-Proliferation of Nuclear Weapons.</i> The Treaty was opened for signature on 1 July 1968 and entered into force on 5 March 1970. Its aims are to prevent the spread of nuclear weapons from nuclear weapon states to non-nuclear weapon states, to promote the process of nuclear disarmament and to facilitate access to nuclear technology for peaceful purposes. The Treaty defines the obligations of both nuclear weapon and non-nuclear weapon states parties regarding the prevention of the further spread of nuclear weapons. It further commits both nuclear weapon and non-nuclear weapon states to pursue negotiations, in good faith, on nuclear disarmament and the cessation of the nuclear arms race. The Treaty also provides for safeguards to be administered by the International Atomic Energy Agency to prevent diversion of nuclear material from peaceful to weapons uses.</p>
Nuclear explosive device	<p>Any nuclear explosive. The term is most frequently used to indicate that a nuclear explosion from such a device would not have a military purpose.</p>
Nuclear weapons	<p>A collective term for atomic and hydrogen weapons of all types and their delivery systems.</p>
PNE	<p><i>Nuclear explosions for peaceful purposes.</i> Test or applied nuclear explosions intended for peaceful engineering projects, such as making underground minerals accessible or major construction projects involving topographical alteration.</p>
Plutonium	<p>In the context of weapons, plutonium usually refers to the fissile isotope plutonium-239, which occurs in nature only in minute quantities. It is manufactured artificially when an extra neutron</p>

	<p>is added to uranium-238 through irradiation. It is used, as an alternative to highly-enriched uranium, for the core of atomic bombs.</p>
Treaty	<p>A treaty, whatever its particular designation, is an international agreement concluded in written form between two or more States (bilateral or multilateral treaties) and governed by international law. It may be embodied in a single original instrument or in two or more related instruments.</p>
Uranium	<p>A radioactive element (atomic number 92) with an average atomic weight, in natural ore, of 238. The two principal natural isotopes are uranium-235 (0.7 per cent of natural uranium), which is fissionable, and uranium-238 (99.3 per cent of natural uranium), which is fertile, i.e., readily absorbs neutrons through irradiation to produce the fissionable material plutonium-239. Uranium 238 alone cannot sustain a chain reaction.</p>
Yield	<p>The energy released in the detonation of a nuclear weapon, measured in terms of kilotons or megatons of TNT required to produce the same energy release.</p>

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ENSURING THE CTBT'S IMPLEMENTATION

The Comprehensive Nuclear-Test-Ban Treaty (CTBT) bans all nuclear weapon test explosions and all other nuclear explosions. It was opened for signature on 24 September 1996 at the United Nations in New York. Two weeks earlier, on 10 September 1996 it was endorsed by 158 votes to 3, with 5 abstentions in the United Nations General Assembly. As of October 1997, the Treaty has been signed by 148 States, including China, France, the Russian Federation, the United Kingdom and the United States. It has been ratified by seven States.

History

By endorsing the CTBT, the Assembly brought to fruition the negotiations that had begun at the Conference on Disarmament (CD) nearly three years before, ending a 40-year campaign for a ban on nuclear-test explosions. The test-ban treaty has been an item on the nuclear disarmament and arms control agenda since the 1950s. It was first promoted in 1954 by the Prime Minister of India, Jawaharlal Nehru, when Great Britain joined the United States and the former Soviet Union in conducting explosive nuclear tests. Public opinion reacted strongly to atmospheric testing and concerns were voiced about health and environmental damage as well as nuclear proliferation.

The first serious negotiations on a total ban were undertaken in 1958 by President Eisenhower and Chairman Khrushchev. In 1963, an attempt by Great Britain, the former Soviet Union and the United States to conclude a CTBT failed over disagreement about the issue of verification. Instead, the three settled on a Partial Test-Ban Treaty (PTBT) banning nuclear explosions in the atmosphere, under water and in outer space. The parties to that Treaty did not foresee any verification mechanisms. Instead they relied on their own national technical means to monitor the compliance of other nuclear weapon states.

As a result, the three nuclear weapon states went underground with their tests. However, France and China continued testing in the atmosphere, until 1974 and 1980 respectively. Pressure towards concluding a comprehensive nuclear-test ban continued—“comprehensive” meaning a ban on all nuclear explosive testing, including underground testing.

In 1968, the preamble of the Nuclear Non-Proliferation Treaty reiterated the intent formulated in the PTBT “to seek to achieve the discontinuance of all test explosions of nuclear weapons for all time and to continue negotiations to this end”. In 1974, the Threshold Test-Ban Treaty and, in 1976, the Peaceful Nuclear Explosions Treaty limited the size of an underground nuclear explosion to 150 kilotons. At the Fourth Review Conference of the Nuclear Non-Proliferation Treaty in 1990, as NPT States parties began to prepare for 1995 when the decision on extending the Treaty would be taken, a firm commitment to open negotiations on a CTBT was called for.

Agreement on a negotiating mandate for an ad hoc committee on a nuclear-test ban was reached at the CD in 1993. The mandate, negotiate intensively a universal and multilaterally and effectively verifiable comprehensive nuclear test ban treaty, which would contribute effectively to the prevention of the proliferation of nuclear weapons in all its aspects, to the process of nuclear disarmament and therefore to the enhancement of international peace and security” was formally adopted in January 1994 and negotiations commenced. They were finally concluded in the summer of 1996. The text that emerged, as is well known, did not satisfy the concerns of all parties involved. This was reflected in the procedure necessary to conclude the negotiations at the Conference and to transmit the draft text to the General Assembly. In the CD, the vast majority of negotiators supported the text and agreed that reopening the negotiations had the potential of destroying the delicate balance that it represented.

This support became apparent when Australia requested the resumption of the 50th session of the General Assembly and submitted a draft resolution that received the support of 127 co-sponsors. The purpose of the resolution was to adopt the treaty and request the Secretary-General, as its depositary, to open it for signature and to call upon all States to become parties to it. The resolution was overwhelmingly adopted on 10 September 1996 by 158 votes in favour, 3 against (Bhutan, Cuba and India) and 5 abstentions (Lebanon, Libyan Arab Jamahiriya, Mauritius, Syria and Tanzania).

Scope

The Test-Ban Treaty bans (article 1) any nuclear weapon-test explosion or any other nuclear explosion. It is “comprehensive” in the sense that it bans nuclear-test explosions in all environments, that is, explosions long since banned in the atmosphere, under water and in space are now prohibited underground as well.

The CTBT ends realistic testing of the functioning of nuclear weapons. Its goal is to halt the development of new weapons of mass destruction by imposing a global ban on nuclear explosions. The development of new types of nuclear arms requires numerous test explosions and, when flaws come to light, design improvements. The absence of explosive testing sharply increases the odds of failure and seriously constrains the possibility of perfecting new designs.

The Treaty thus adds to and reinforces the nuclear non-proliferation regime established and verified under the NPT. The NPT and its verification regime aim at preventing the proliferation of weapon-grade fissile material; the CTBT and its verification regime aim at preventing the explosive testing of nuclear devices. But the CTBT does more. It not only constitutes an important contribution to the prevention of the proliferation of nuclear weapons, it also contributes to the process of nuclear disarmament. By putting an end to the only realistic way of testing the functioning of nuclear weapons, the Treaty constrains the development of ever more sophisticated and qualitatively improved nuclear weapons. Moreover, the Treaty gives a positive impetus to further implementation of the principles and objectives for nuclear non-proliferation and disarmament adopted at the NPT Review and Extension Conference in 1995.

Properly monitored and enforced, the Test-Ban Treaty will contribute to ending the qualitative arms race and encourage much deeper cuts in nuclear arsenals than have been attempted thus far.

Verification system

The Treaty provides for its verification by founding the Comprehensive Nuclear-Test-Ban Treaty Organisation (CTBTO), a permanent international organisation with the task of building and running a global verification system. The verification regime includes an International Monitoring System (IMS) composed of seismological, radionuclide, hydroacoustic and infrasound monitoring stations. A global network of 321 monitoring stations to verify compliance with the Treaty will be established to monitor the atmosphere, underground and

underwater environments. The locations of verification facilities have been carefully chosen so as to be able to guarantee equal and adequate global monitoring coverage. The verification regime also includes an International Data Centre (IDC) that will receive information from all the stations worldwide. Moreover, a consultation and clarification procedure, on-site inspections and confidence-building measures are set forth in the Treaty. These mechanisms and procedures will be carefully monitored and discussed by the organs of the CTBTO.

Entry into force

The CTBT will enter into force—and the mechanisms and procedures described above will be fully applicable—180 days after the date of deposit of the instruments of ratification by the 44 States members of the CD that have nuclear reactors or nuclear research facilities on their territory as stipulated in article XIV of the Treaty. The entry into force clause was designed to include the five nuclear weapon states (China, France, the Russian Federation, the United Kingdom and the United States) as well as India, Israel and Pakistan. Of the 44 States that are required to ratify the Treaty, the Democratic People's Republic of Korea, India and Pakistan have not signed it.

Article XIV, paragraph 2 of the Treaty provides that, if the Treaty has not yet come into force three years after the date of the anniversary of its opening for signature, those countries that have ratified it may hold a conference to consider and decide what measures may be taken to accelerate the ratification process in order to facilitate its early entry into force. That conference, to be expected in late 1999, will probably discuss different options to bring the Treaty to life by political or legal means.

Preparatory Commission

Concrete work to prepare for the implementation of the CTBT started immediately following its opening for signature. The States signatories decided to bridge the period till entry into force by cooperating in the framework of the Preparatory Commission for the CTBTO. The basis for this cooperation is the "Text on the Establishment of the Preparatory Commission", which was negotiated under the auspices of the CD in parallel to the treaty negotiations and was approved by the States signatories on 19 November 1996 in New York.

According to that document, the purpose of the Preparatory Commission is to carry out the necessary preparations for the effective implementation of the Treaty following its entry into force. The

Preparatory Commission, which is located in Vienna and meets at regular intervals, has the status of an international organisation. It comprises two bodies: a plenary body composed of all signatory States and the Provisional Technical Secretariat (PTS) headed by the Executive Secretary. The mandate of the Preparatory Commission is to ensure that the verification regime of the Treaty is operational at the time of entry into force. It will do so by building up the network of monitoring stations and by establishing the IDC. The host countries of the monitoring stations will cooperate with the Provisional Technical Secretariat in setting up and operating the various verification facilities. The IDC, where data from the individual monitoring stations are collected, will be established as part of the PTS in Vienna.

The progressive commissioning and operation of the IMS and the IDC are the main tasks of the Preparatory Commission for the years 1997 and 1998. The Commission will fully implement the provisions of the CTBT referring to the IMS and the IDC. In other words, the Preparatory Commission will run the verification system foreseen in the Treaty prior to entry into force. The work of its organs will thus exercise political pressure towards enforcing the end of explosive nuclear testing even before the ban in article 1 of the Treaty becomes legally binding.

It is hoped that the results of this work will convince non-signatory States, in particular the Democratic People's Republic of Korea, India, and Pakistan, of the significance of the CTBT and of the importance of the deliberations taking place in Vienna. In this respect, the Preparatory Commission already invited all non-signatory States, which are to have IMS facilities on their territories, to attend the meetings, and the activities of the working groups of the Preparatory Commission. Signature of the Treaty and successive ratification of all States are necessary for making the CTBT regime a universal one. By signing and ratifying the CTBT and ensuring its entry into force, States will contribute significantly to collective international security.

THE CTBT: A STEP TOWARDS A NUCLEAR FREE WORLD

A landmark event in the field of nuclear disarmament took place at the United Nations in New York on 24 September 1996 when the representatives of seventy-one States signed the Comprehensive Nuclear-Test-Ban Treaty (CTBT), adopted just two weeks earlier by an overwhelming majority in the General Assembly. All five nuclear weapon states were represented. President Clinton of the United States, the

foreign ministers of the other four nuclear weapon states and Prime Minister Ryutaro Hashimoto of Japan were among the first to sign the Treaty.

The Treaty may, however, not come into force. India, whose adherence is required for the Treaty to become legally binding, has made it unmistakably clear that it will not become party to it. In its view, the Treaty lacks a concrete time-frame for a programme to abolish nuclear weapons and is therefore inherently discriminatory towards non-nuclear weapon states.

Even with this setback, the signing of the Treaty by most other States was an important milestone, providing the political constraints necessary to put an end to nuclear testing. The Treaty has already been signed by 148 States and Japan was the fourth to ratify it. The Treaty will almost certainly receive rapid and near universal accession. It will become extremely difficult for any State to challenge the determination of such a large majority of the world community and conduct nuclear testing again. The underground nuclear test conducted by China at the Lop Nor test site on 29 July 1996 thus most probably marked the end of the fifty-one-year history of explosive nuclear tests. It has been estimated that there was a total of 2,049 nuclear tests during the last half century.

Nuclear Tests (1945-1996)

State	Number of tests
United States	1,032
the former Soviet Union	715
France	210
China	46
United Kingdom	45
India	1

Note: India carried out its only underground test in the desert of Rajasthan in 1974 and announced that it was for peaceful purposes.

Nuclear Tests

The United States exploded the first nuclear device at Alamogordo Desert in New Mexico on 16 July 1945. Less than a month after the test, two atomic bombs were dropped on the cities of Hiroshima and Nagasaki. The end of the scourge of the Second World War brought the dawn of the nuclear age. The madness of the nuclear arms race that followed led to the present situation of "overkill". There have

been more than enough nuclear weapons stockpiled to annihilate the entire human race. For fifty years mankind has endeavoured to meet the challenges and overcome the fear that the nuclear age has brought.

In 1946, the United States carried out two tests at Bikini Atoll in the Marshall Islands, one in the atmosphere and the other under water, in order to evaluate the effects of atomic bombs on naval vessels. The nuclear monopoly of the United States, however, was soon to be lost. The first Soviet atomic bomb test was conducted in July 1949, but it was not widely known until September 1949, when the United States announced that it had detected the test.

In order to maintain supremacy in nuclear weapons, the United States decided in January 1950 to manufacture a hydrogen bomb. The first explosion of a hydrogen bomb was carried out at Eniwetok Atoll in the Marshall Islands on 1 November 1952. It was a 3-megaton bomb, approximately three hundred times more powerful than the atomic bomb dropped on Hiroshima. The Soviet Union caught up and, within nine months, in August 1953, carried out its first hydrogen bomb test. The United Kingdom also started its own test programme. The first United Kingdom test was at the Montebello Islands in Australia, in 1952, and a hydrogen bomb was tested at Christmas Island in the Pacific, in 1957. France and, lastly, China also joined the nuclear club. China exploded its first nuclear device in the atmosphere on 16 October 1964. Competition to develop nuclear arms resulted in more tests of higher-yield bombs and precipitated a viciously spiralling arms race.

Worldwide Concern

The United States hydrogen bomb test at Bikini Atoll on 1 March 1954 alarmed the world. The test device was a 15-megaton bomb. A Japanese fishing boat, No. 5 Fukuryūmaru (Lucky Dragon), received radioactive fallout 90 minutes after the detonation while sailing 80 nautical miles east of the atoll in the area that was outside the designated danger zone. The radioactive fallout later came to be known as "death ashes". It was estimated that the crew of the fishing boat was exposed to a fatal dose of 600 roentgens; a fisherman later died of leukemia, which is a typical symptom of radiation exposure. The waters of the Pacific and marine resources well outside the testing area were contaminated with radiation. Thousands of tons of fish had to be destroyed when unloaded at Japanese ports and the Japanese people strongly suspected radioactive contamination of their food supplies. This led to a nationwide movement in Japan against the nuclear tests.

As a result, scientists around the world became aware of the global radioactive effects caused by a series of tests. It was also discovered the Soviet hydrogen bomb, tested a year before, had released a large amount of radioactive particles. Radioactive particles emitted by nuclear tests in the atmosphere had spread over the earth. Proponents of nuclear tests claimed that the radiation caused by tests was within the maximum permissible dose and that there was negligible harm to human health. That argument, however, did not convince the general public. Neither the short-term nor the long-term harmful effects were known precisely, and above all, the concept of what was "permissible" was based on a determination of the balance between the benefits and demerits of the particular issue. As the general public in the non-nuclear weapon states could not see any benefits accruing to them from such tests, the concept of permissibility was meaningless for them.

The cessation of nuclear weapon tests became a prime objective of the United Nations in the mid-1950s. Interest in the issue was first aroused as the world became aware of the harmful nature and effects of radioactive fallout from atmospheric nuclear tests and as it became apparent that no region could be spared the harmful effects of radioactive debris. The test-ban issue was subsequently pursued either as an element of a comprehensive plan for nuclear disarmament, as a separate measure linked with progress in other nuclear disarmament issues, or as a nuclear disarmament issue on its own. The nuclear-test ban has been an independent item on the agenda of every session of the General Assembly since 1957. The Assembly has devoted more of its time to its consideration, and adopted far more resolutions on it, than any other disarmament issue. Over the years, increasing pressure was brought to bear on nuclear weapon states by resolutions that deplored, condemned, and called for an early end to the tests.

Partial Test Ban

In 1961, two proposals were made for a comprehensive agreement on the cessation of nuclear tests: one by the United States and the United Kingdom, the other by the Soviet Union. In 1962, the Conference of the Eighteen Nation Committee on Disarmament (ENDC) convened in Geneva for the first time. Its first task was to establish a subcommittee that consisted of representatives of those three nuclear Powers and called upon them to consider proposals with a view to formulating a treaty on the discontinuance of nuclear weapon tests. It is important to note that the proposals under consideration referred to a comprehensive test ban.

The basic position of the United States and the United Kingdom was to ban nuclear tests in all environments with effective and compulsory verification. They proposed that there should be provisions for a quota of mandatory on-site inspections in the case of suspicious underground events because seismic stations could not identify all nuclear tests. As an alternative, the United Kingdom and the United States proposed a test ban without verification in the three non-controversial environments: the atmosphere, outer space and under water. The Soviet Union opposed mandatory on-site inspections and maintained that States had sufficient means to detect and identify all underground tests. As additional guarantees for the effectiveness of verification, the Soviet Union proposed the use of automatic seismic stations ("black boxes"). The Soviet Union rejected a partial treaty but was not opposed to considering such a treaty if underground tests were voluntarily suspended until a final solution was reached. Other members of the ENDC, the non-aligned members in particular, offered various measures to break the impasse on the question of verification, including an international scientific commission. But the differences between the two sides were too great to reach a compromise.

The negotiations were taken out of the ENDC and, in June 1963, the three nuclear Powers announced that they had agreed to hold talks in Moscow in July. The Soviet Union said that the insistence by the United States and the United Kingdom on on-site inspection made an underground ban impossible, but that it would be prepared to sign a limited treaty. The Moscow negotiation began as scheduled and the Soviet Union did not insist on its previous demand that a partial test ban be accompanied by a moratorium on underground testing. The Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water was signed in Moscow on 5 August 1963 by the foreign ministers of the three nuclear weapon states in the presence of the United Nations Secretary-General, U Thant. It became known as the Partial Test-Ban Treaty (PTBT). France and China did not become party to it and continued to carry out atmospheric tests after the Treaty's entry into force. China conducted atmospheric tests as late as 1980.

Appraisal of the PTBT

The PTBT not only reflected but also contributed to an improvement in international relations, and was an important step towards a comprehensive nuclear-test ban. It was welcomed by virtually all States and received wide acceptance. Nuclear testing had two distinct consequences: (i) it contaminated the global environment and (ii) it

contributed to the development of nuclear weapons. The PTBT was more relevant to the first of these two aspects and largely freed people from fears about health and the genetic harm that nuclear tests could cause for future generations. The Treaty's restriction of testing to the underground environment placed some physical constraints on the numbers and the size of the tests. Because it did not ban all testing, the PTBT was not an effective nuclear disarmament instrument.

Were the three nuclear Powers really prepared to have a comprehensive nuclear-test ban when they originally proposed it? Were their differences of opinion on the question of verification genuine? In my opinion, the answer to both those questions became clear: both sides conducted intensive underground test programmes for almost 30 years after the signing of the PTBT. Aware that they could not go on contaminating the earth with atmospheric tests, they were, nevertheless, confident that underground tests would provide them with necessary data for the development of their nuclear arsenals.

Untiring Efforts for the CTBT (1964-1990)

Soon after the adoption of the PTBT, the ENDC initiated consideration of a comprehensive test ban, relying on the provisions of the preamble of the PTBT that sought to achieve the discontinuance of all test explosions of nuclear weapons for all time. The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) of 1968 also reconfirmed this objective. Those efforts were backed by the General Assembly, in particular through the holding of three special sessions on disarmament. This was a long period of frustration for the promoters of a comprehensive ban. The nuclear arsenals of the East and the West were at their highest levels; weapons with increased yields were developed and underground tests were frequent.

The principal obstacle to achieving a test ban throughout the period was the difference in position over what would constitute a satisfactory verification regime to ensure compliance with a prohibition on underground nuclear tests. The former Soviet Union continued to maintain that any suspected violation of the ban could be adequately verified by "national technical means (NTM)" available to all States, combined with international measures such as exchanges of data on seismic events. The United States, on the other hand, consistently maintained that while NTM might be sufficient for detecting, locating and identifying tests of relatively large magnitude, certain tests of lesser magnitude but still militarily significant could not always be adequately distinguished from earthquakes or other seismic events.

Other issues raised were the need for all five nuclear weapon states, France and China included, to participate in the ban, and the question of prohibiting peaceful nuclear explosions (PNEs).

While some steps were taken bilaterally between the United States and the Soviet Union, such as the 1974 Treaty on the Limitation of Underground Tests (TTBT) and the 1976 Treaty on Underground Nuclear Explosions for Peaceful Purposes (PNET), both of which limited the threshold yield to 150 kilotons, little progress was made on the substance of it was announced that trilateral negotiations among three nuclear Powers (Soviet Union, United Kingdom and United States) would start and there were indications of substantial progress towards a comprehensive agreement. Despite the apparent progress, the negotiations were suspended in 1980. Meanwhile, the Committee on Disarmament (successor to the ENDC) continued to work through the Ad Hoc Group of Scientific Experts to Consider International Cooperative Measures to Detect and Identify Seismic Events (AHGSE), which was to eventually provide the core of the verification system for the CTBT.

Debate in the Conference on Disarmament (CD) (successor to the Committee on Disarmament and empirical evidence disclosed that the nuclear Powers were not ready to give up nuclear tests: they were an important means of ensuring and enhancing the effectiveness of their nuclear arsenals. They claimed publicly that nuclear tests were necessary—with the argument that they were required to maintain the effectiveness and safety of existing nuclear stockpiles—to upgrade and design new warheads and to keep nuclear physicists employed.

Those were precisely the reasons why Japan supported a comprehensive test ban: it represented a meaningful disarmament measure that would make it difficult for nuclear weapon states to maintain their stockpiles and force them to reduce their arsenals. The main issue in the CD was no longer a technical question of verification but a matter of political will.

In 1984, Foreign Minister Shintaro Abe of Japan suggested that in order to break the impasse on the issue of verification, the CD should make an in-depth study of a step-by-step formula. Under that formula, the yield of underground nuclear-test explosions considered technically verifiable on a multinational basis would be set as the threshold, and agreement should be reached on banning explosions of a yield above that threshold. Thereafter, the threshold would be lowered as the verification capability improved. The idea of limiting the yearly numbers of tests was also floated. The step-by-step proposal received varied

reactions: support, in principle, on the one hand, and caution, on the other hand, because of apprehensions that such a formula might postpone the achievement of the final comprehensive ban.

Meanwhile, the United States and the Soviet Union placed priority on the abolition of intermediate and shorter-range nuclear forces (INF) and their bilateral talks on the reduction of strategic arms (START I). It took until 1990 for the CD to establish an Ad Hoc Committee on a Nuclear Test Ban and to start debate on a CTBT.

Amendment Conference of the PTBT

The Fourth Review Conference of the NPT, in 1990, failed to produce a final document because of sharp disagreement on the test-ban issue. Those States that were dissatisfied with the lack of progress resorted to the procedures for amending the PTBT: to convert the partial test-ban Treaty to a comprehensive nuclear-test-ban treaty through its amendment process. At the request of more than one third of the parties to that instrument, an Amendment Conference was convened in New York from 8 to 17 January 1991. However, due to the divergent positions on the practicality of amending the PTBT and the fact that consideration of a comprehensive ban was about to start in the CD, no consensus was reached on an agenda or on any extension, reconvening or resumption of the Amendment Conference. It has always been my belief that the issue of a comprehensive test ban must be tackled squarely and not through the back door. I sincerely doubt that the PTBT amendment approach had any serious impact on the issue.

Comprehensive test ban

The final stage was being set. In a crucial development in 1993, the CD decided to give the Ad Hoc Committee on a Nuclear Test Ban a mandate to negotiate a CTBT. France participated for the first time.

The issue of a comprehensive test ban was highlighted during the 1995 NPT Review and Extension Conference; indeed, it was an essential element in the overall package on the Treaty's indefinite extension. The Review Conference agreed that completion of negotiations on a CTBT by the CD no later than 1996 would be a step towards implementation of article VI of the NPT and that, pending the entry into force of a CTBT, the nuclear weapon states should exercise utmost restraint. In the event, France and China did not adhere to this latter commitment. The intensive negotiations in the CD produced a voluminous rolling text of a draft treaty with more than 1,200 brackets

around parts not agreed upon. The consensus rule of the Conference prevented the adoption of the Chairman's text of the treaty by the end of its 1996 summer session, the deadline date set by the Review and Extension Conference of the NPT.

On 9 July 1996, the International Court of Justice in The Hague handed down its advisory opinion, upon request of the General Assembly, on the legality of the threat or use of nuclear weapons. In its opinion, the Court appreciated the full importance of the recognition of an obligation to negotiate nuclear disarmament in good faith, as stipulated in article VI of the NPT. The legal import of that obligation goes beyond a mere obligation of conduct; the obligation involved is to achieve a precise result—that of nuclear disarmament in all its aspects—by adopting a particular course of conduct, namely, the pursuit of negotiations on the matter in good faith. This two-fold obligation to pursue and to conclude negotiations formally concerns all 185 States that are parties to the NPT. The decision of the Court was quite relevant to the issue of a comprehensive nuclear-test ban, as the NPT reaffirms the goal of such a ban.

The spotlight shifted from the CD to the General Assembly. Before the closure of its fiftieth session on 10 September 1996, the Assembly voted to adopt the text of the Comprehensive Nuclear-Test-Ban Treaty. The result of the vote was 158 in favour, 3 against (Bhutan, India and Libyan Arab Jamahiriya) with 5 abstentions.

In contrast to the very concise PTBT, which consists of only five articles and has no verification regime, the CTBT is voluminous, consisting of seventeen articles with 170 paragraphs, two annexes to the Treaty, a protocol and two annexes to the protocol. The Treaty prohibits all nuclear tests in any environment. It provides for the establishment of the CTBT Organisation in Vienna, and an intricate verification regime, including an international monitoring system and on-site inspections. The core of the monitoring system is to be seismic detection. For the Treaty to come into effect, it must be ratified by 44 States listed in Annex 2, which includes India.

Future of the CTBT

From a technological point of view, the CTBT will most likely not place unbearable constraints on the nuclear programmes of nuclear weapon states. They have accumulated enough data to maintain their nuclear capabilities. Scientific and technological advances, computer simulations and so-called "cold" tests in the laboratory permit them to

upgrade and modernize their nuclear arsenals. The political importance of the CTBT, nevertheless, should not be underestimated.

As stated at the outset, the CTBT as it currently stands will not come into force because of India's non-adherence. India's position is clear. In calling for an early abolition of nuclear weapons, India deserves respect. It is my view that the negotiators should never have insisted on the requirement of the ratification of 44 States in order for the Treaty to come into force. An overwhelming majority, that is, 39 of the non-nuclear weapon states specified, are parties to the NPT. They are already under legal obligation not to possess any nuclear explosive device. Though they could, of course, make significant contributions to the CTBT by assisting in implementing the verification regime, it is not they but the five nuclear weapon states that must undertake the central obligation of the CTBT: forgoing nuclear tests. It should be recalled that the PTBT came into force with the requirement of ratifications of only three nuclear Powers—the Soviet Union, the United Kingdom and the United States.

It is most certain that the Treaty will not be in force three years after its signing and that a conference of those States that will have ratified it by then will be held in accordance with article XIV, paragraph 2 in or after September 1999. The best way out seems to be for such a conference to adopt a protocol to bring into force the CTBT among those States that will have ratified it, provided that all the five nuclear weapon states are included. Non-adherence by India or by other non-nuclear weapon states should not pose, in my view, any significant threat to the nuclear weapon states that have accumulated vast nuclear technological data. The legal undertaking of the CTBT obligation by the nuclear weapon states does in fact put enormous pressure on any non-nuclear weapon State not to defy the CTBT. In the unlikely event of a nuclear test by an outsider of the CTBT, the nuclear weapon states can always resort to article IX, paragraph 2, and free themselves from obligation to the CTBT. What is politically important is to bring the CTBT into force as early as practically possible.

Conclusion

The CTBT is not an end in itself. It is a step, a peripheral step, towards a nuclear free world. The "right" path of nuclear disarmament is none other than a straight reduction of nuclear arsenals. The nuclear weapon states have a special responsibility to implement article VI of the NPT. The non-nuclear weapon states party to the NPT also have the right to participate in realising such objective.

Disarmament is a means by which we create a safer and more stable world. Utmost care must be exercised not to destroy the precarious military balance upon which global security is grounded. Reduction and abolition of nuclear weapons, particularly the still massive explosive power of the major nuclear weapon states, is only possible through a step-by-step approach. However, an argument can be made for a rapid and total elimination of so-called independent nuclear forces. As long as they exist, there is a temptation for other States to acquire the same.

Mankind has unfortunately acquired the knowledge of nuclear weapons. It will not be possible to erase it from the human brain. There is always a danger that an unauthorised person may gain the possession of a nuclear weapon. We must organize ourselves in order to cope with that possibility.

CTBT: TOWARDS ITS ENTRY INTO FORCE

The Comprehensive Nuclear-Test-Ban Treaty (CTBT) was negotiated in the Conference on Disarmament (CD) in Geneva, adopted by the United Nations General Assembly in New York on 10 September 1996, and opened for signature on 24 September 1996. The negotiations took less than three years. But, they were difficult. They were difficult because the obligations assumed by States signatories under the Treaty would impact—in a variety of ways—upon their fundamental security interests. And the negotiations were complex because the final Treaty document would contain a blueprint for an international regime which, with the analysis of data from four technologies, and provision for the conduct of on-site inspections, would verify that States party to the CTBT were complying with the basic obligation not to conduct nuclear explosions.

This paper focuses on article XIV of the Treaty concerning entry into force (EIF). This article will doubtless be a matter for study and debate for many years to come, both for the intriguing manner of its negotiation and for the potential ramifications its conditions have for the future of the regime designed to implement the CTBT. This paper looks at what the various options were for the EIF formula and the process by which the final outcome was reached, and assesses future implications and objectives for international action.

The Options

From the beginning of the negotiations, a series of options, ranging from simple to complex, existed for how the CTBT should come into force. They reflected a mixture of concerns, but came down to two

fundamental (and unfortunately conflicting) views: that all “key” States should ratify the Treaty before EIF; and that EIF should not be blocked by a delay in ratification by any individual State. Many variations were proposed, but they could be summarised into the following general types.

Specific list (EIF occurs once ratifications are lodged by all States on a specified list; often combined with a set number of ratifications)

A number of draft texts, including those produced before the negotiations actually began in the CD in early 1994, proposed that EIF occur when a certain number of countries, including the five nuclear weapon states (NWS), had ratified the Treaty. This formula was supported as sensible by many countries, including some of the NWS and some countries favouring the simple numerical formula, not least because it was generally accepted that a Treaty could only emerge from the CD negotiations with the endorsement of all five NWS, and would be signed and ratified by them.

Other countries argued that they did not see the sense in requiring the definitive renunciation by some of the option to conduct nuclear explosions, without requiring a parallel commitment from all other States of concern. They argued that if the CTBT was to be fully effective, it would have to include all “key” States that were, in addition to the five NWS, capable of testing and who were not already prohibited from doing so by virtue of being parties to an existing international agreement (“key” States in this context were recognised as all five NWS and the three so-called threshold States). It was argued that there would be no point in EIF if the activities of the threshold States were not covered, and, in addition, that a “5+3” formula, as it became known, would exert the most effective pressure on the threshold States to join the regime.

Simple numerical formula (EIF is automatic once a set number of ratifications has been lodged)

Proponents of the simple numerical formula placed prime importance on avoiding a situation where the Treaty’s EIF could be “held hostage” by any one State, or group of States, and run the risk of not entering into force. They did not deny the desirability of having all “key” States within the Treaty regime. Nor did they deny that some countries would judge that their security interests may not be fully met without the parallel ratification of other countries, especially in their region. They argued, however, that States had the right to condition their ratifications

any way they liked, and that right existed regardless of the Treaty provisions. For example, it was clear that the five NWS would probably wish to sign and ratify the Treaty in concert, but could arrange to do so among themselves. It was further argued that regardless of any EIF provision, there would inevitably be international pressure on States not yet party to the Treaty, and that the optimal method to induce countries to join the Treaty was not by backing them into a corner (which could be counterproductive), but by drawing them into an operational, effective, internationally recognised regime. The experience of the Nuclear Non-Proliferation Treaty was cited as an example of how a treaty could operate effectively and become an important international norm without optimal membership from the outset.

Waivers, defaults, opt-outs

In an attempt to reconcile the differences between proponents of the above options, a variety of compromise formulas were designed to be attached to and soften more stringent (like the “5+3”) formulas. For example:

- A simple numerical formula whereby EIF would occur automatically for all States that waived the specified conditions once a set number of ratifications with waivers had been lodged (States that chose not to exercise the waiver would not become States parties—that is, EIF would not occur for them—until all specified conditions, for example, a list of requisite ratifications, had been met).
- A waiver conference proposal, whereby provision could be made for the convening of a conference at which specified EIF requirements could be waived, provided all NWS had already lodged instruments of ratification, and provided all NWS plus a majority of other States that had ratified the Treaty so agreed.
- A “consensus waiver” arrangement that would entail the holding of a conference of ratifying States a set number of years after the Treaty had been opened for signature. At that point, those States could decide by consensus to have the Treaty enter into force if the initial EIF requirements had not been met. This could be accompanied by an opt-out provision that would allow any ratifying State to stand aside from the Treaty at that stage.

The negotiation

While the EIF options were discussed throughout the negotiations, the article was readily identified by most as a classic “end-game” issue,

which would be hammered out as part of a final deal on the Treaty text. As the negotiations entered their final year in 1996, no convergence of opinion was apparent. The complicated waiver formula included in the Australian Model Treaty Text tabled in the CD on 29 February shows how difficult it was to draft a proposal that even approximated the middle ground between competing concerns.

The majority of countries were in favour of the simple numerical formula, seeing too many disadvantages to the possibility of the Treaty's implementation being "taken hostage" by any country for whatever reason, whether through apathy or national disagreement with aspects of the final Treaty text. Some "key" States preferred a set number of ratifications, including by the five NWS. At the same time, however, several "key" States were adamant that they would accept only a formula that required ratification by all five NWS and the three thresholds—the "5+3" formula.

The crunch came when the Chair of the negotiations, Ambassador Jaap Ramaker of the Netherlands, moved to table a draft text at the end of May 1996. Among all of the other decisions he had to make—for example, on the critical issue of how to allow the triggering of on-site inspections—he had to propose something for EIF. It was a very difficult decision. Although the draft the Chair eventually presented to delegations on 28 May was only a first try, and intended as an indication of how the final Treaty text could look, it was inevitably a powerful signal to negotiators of where the Chair himself—who should have been in the best position to know—thought agreement between diametrically opposing views could be struck.

The Chair opted for the "5+3" formula. To avoid any hint of discrimination or special treatment, the eight States were not specifically named. So the "5+3" was presented in a larger framework as requiring ratification by all States listed in the annex to the draft treaty and the hosting of primary seismic and radionuclide monitoring stations, which included the five NWS and the three thresholds.

The inclusion of the "5+3" formula created a good deal of angst amongst negotiators, and the extent to which the Chair himself was unhappy with it was demonstrated by the energy that he and his delegation invested into finding an alternative between 28 May and when he tabled his more definitive draft text on 28 June. While consulting with the major players, the Chair tabled his preferred formula in the CD on 20 June. The proposal was a very complex combination of the conference and "waiver" provisions (which would allow ratifying States

to waive initial EIF requirements after a period of time) and an “opt-out” provision (which would allow ratifying States to opt out of the Treaty at the point of EIF if they judged it to be against their security interests).

The EIF situation became even more complicated when India announced on 20 June that it would not sign the CTBT in the form tabled by the Chair, on 28 May, on the grounds that the draft treaty did not fulfil the negotiating mandate and constituted an inadequate contribution to nuclear disarmament. The announcement served to entrench the arguments of both sides of the EIF debate. Advocates of the simple numerical approach said that it was exactly this situation—where one relevant country decided not to sign the Treaty—which they sought to neutralize by allowing implementation of a verification regime to proceed regardless. Advocates of the “5+3” formula argued that India’s decision not to sign proved what they had always feared—that under a simple numerical formula some “key” States could commit themselves never to test again, while others could retain the option, and the Treaty could still enter into force. They argued that the “5+3” formula would place the onus on “holdouts” in international eyes, and mount the most effective sort of pressure for them to come on board. The situation was further complicated when India wrote to the CD President on 26 June to withdraw its monitoring facilities from the lists annexed to the draft treaty, and thereby removed itself from the list of States required to ratify the Treaty for it to enter into force.

Pressure mounted on the Chair as he prepared to table his final—implicitly a “take it or leave it” text—on 28 June. Indeed, it is entirely possible that some “key” States informed the Chair that, without “5+3”, they would reject the Treaty as a whole, and it was clear that there would be no treaty if those nations also became holdouts on the EIF issue.

The 28 June version was slightly different from the previous one. First, to take account of India’s withdrawal of its monitoring facilities from the draft treaty annex, the Chair included a new list in paragraph 1, this time composed of the 44 States which participated in the 1996 session of the CD and which appear on Table I of the International Atomic Energy Agency 1996 edition of “Nuclear Power Reactors in the World”. Second, under pressure to soften the stringent “5+3” requirement, the Chair also included a second paragraph known as the “positive conference” formula. Under this provision, conferences could be called three years after the Treaty’s opening for signature

and annually thereafter, on request of a majority of States that had deposited instruments of ratification. The conferences would be able to “examine the extent to which the requirement set out in paragraph 1 has been met and shall consider and decide by consensus what measures consistent with international law may be undertaken to accelerate the ratification process in order to facilitate the early entry into force of this Treaty”.

The positive conferences were not intended to have any legal power, only political (that is, they would lack the power to change the EIF provisions, and the Treaty could still not be implemented without 44 ratifications). Furthermore, the strict “5+3” proponents insisted that any action taken by the conferences would have to be “by consensus”.

The Chair asked delegations to study his 28 June text before the CD session recommenced, on 29 July, when they were expected to have final views on whether or not they could accept it. EIF was one of a small group of issues (including whether the draft treaty’s preamble was sufficiently strong in its references to nuclear disarmament) that prompted intensive inter-sessional activity.

For a number of countries, including Australia, it was the EIF provision that caused the most India’s decision not to sign the Treaty had confirmed there was a real possibility of—at the very least—a delayed EIF. At the same time, there was the competing imperative that the negotiations not recommence on 29 July, with the attendant risk of unravelling the whole text and losing the best chance in many years to conclude a CTBT. Australia and some other countries were interested in possibly substituting a more flexible EIF formula into the draft text—but only if it could be agreed by consensus, and only if it could be inserted cleanly without opening up to renegotiation other elements in the 28 June draft. A number of like-minded countries conducted rounds of consultations in capitals and Geneva, to gauge levels of support.

In the event, it was judged that no “improvement” on EIF was achievable. Crucial to that conclusion was the United States decision in early July to throw its weight behind the Chair’s text, despite its own well-known misgivings about the wisdom or desirability of a “5+3” EIF formula. Countries ultimately recognised that the final Treaty text represented a finely balanced set of difficult compromises made by all negotiating parties, and that it was as fair a reflection of the middle ground as it was possible to achieve. The EIF formula in the Chair’s 28 June text was going to stay.

In the meantime, India's concerns about the EIF formula were growing. In her statement to the CD on 20 June, Indian Ambassador Arundhati Ghose had signalled that an EIF formula including India would be unacceptable. On 8 August, Ghose stated to the CD plenary that India had "the strongest objections" to the updated EIF formula in the 28 June text because it sought "to enforce our signature by means unprecedented in treaty-negotiating practice in that it creates obligations for a country without its consent and therefore runs contrary to customary international law".

A series of efforts and representations were made in an attempt to persuade India that there was no coercive intent behind the article's wording. The Chair told the Ad Hoc Committee in the CD on 9 August:

"It is my firm conviction that the current article on entry into force does not impinge on the sovereign right of any State to take its own decision about whether or not to sign and ratify the Treaty. Nor does the article on entry into force impose any legally binding obligations on a State not party to the Treaty—regardless of whether or not ratification by that State is a condition for entry into force of the Treaty. Finally, it is my understanding that article XIV, paragraph 2, does not refer to United Nations Security Council measures in accordance with Chapter VII of the United Nations Charter."

In the event, it was on the grounds of its objections to the EIF formula that India withheld its consent from the CTBT draft text in the CD. At this point it is important to stress that India's decision, in effect, to veto the text was a legitimate move within the rules of procedure of the CD. It was equally legitimate for the rest of the international community to make use of an alternative route, as it turned out, the UN General Assembly, to adopt the Treaty and open it for signature.

The Outcome

The vote in the Assembly on 10 September to adopt the CTBT showed the intensity of the international desire to have a CTBT. Despite the reservations held on aspects of the Treaty by almost all countries—some on EIF, some on nuclear disarmament, some on elements of the verification regime—and indeed on the means of its delivery to the General Assembly, virtually every country decided to put those reservations aside in the interest of endorsing a Treaty that would end nuclear testing for all time. To date, more than 140 countries have signed the CTBT and 7 (Czech Republic, Fiji, Japan, The Federated States of Micronesia, Mongolia, Qatar, and Uzbekistan) have ratified. Of the 44 countries whose ratification is required for the Treaty to enter into force, so far only three have not signed.

The benefits of having the CTBT adopted and open for signature are manifold. The CTBT creates a powerful international norm that nuclear testing is unacceptable, and any country that now conducted a test would face intense international condemnation. Indeed, any country that signs the Treaty—regardless of whether or not it ratifies—is obliged to abide by its provisions by virtue of the rules of the Vienna Convention on the Law of Treaties, which state that a State which has signed a treaty is obliged to refrain from acts which would defeat the object and purpose of the treaty even before its entry into force. Therefore, through their signature of the Treaty on 24 September, the five NWS have formalised their moratoriums and accepted, for the first time, constraints on the qualitative improvement of nuclear weapons, thus, bringing the nuclear arms race to a definitive end. By permanently removing the nuclear explosion option, the CTBT constitutes a vital step on the road to nuclear disarmament.

It is not, however, possible to escape the reality that we can not be certain when the CTBT will enter into force. We do know that it cannot enter into force without the signature and ratification of all 44 States listed in the annex to the Treaty. The positive conferences provided for by the EIF formula will give an opportunity to ratifying States to project their political will in favour of the Treaty by keeping the issue of the Treaty's non-EIF in the forefront of international attention. The positive conferences will not, however, have any legal power to amend the EIF provisions to allow the Treaty to enter into force, nor to allow EIF for discrete parts of the Treaty.

Time will tell whether uncertainty about the date of the CTBT's EIF will affect the Treaty's strength in the long run. One litmus test will be the success of the Preparatory Commission (PrepCom) for the CTBT Organisation (CTBTO), which was established on 19 November 1996, and which is entrusted with the establishment of an organisational structure and verification capability in preparation for the establishment of the CTBTO, upon EIF. The PrepCom document states that the Commission shall use funds "to establish and, pending their formal commissioning, to operate provisionally as necessary the International Data Centre and the International Monitoring System networks provided for in the Treaty".

It would seem, therefore, that a degree of de facto verification of the Treaty is possible. Some countries are advocating a tempered approach to the Prep-Com's activities, citing—amongst a variety of other reasons—the absence of certainty on the date of EIF as a reason

for not moving more quickly, and are asking whether it is necessary to invest capital into a complex verification regime and organisation whose full operation is not guaranteed. Furthermore, it seems that in the period before EIF, even if some degree of monitoring proves possible, on-site inspection is unlikely to be available as a means of clarifying whether or not certain detected events are nuclear explosions.

The way ahead

The international community felt strongly enough about the importance of having a CTBT to not simply acquiesce in, but to actively support the adoption of the CTBT at the General Assembly through what were unusual—some claimed unorthodox—means. Sizeable political will exists to have an effective, internationally verifiable CTBT, with full legal effect. The question is how best to handle the uncertainty of the timing of EIF, and to maximize the contribution the CTBT makes to the process of nuclear disarmament.

Supporters of the CTBT—and they are the vast majority of the international community—must dedicate themselves to two key objectives:

- Achieving the broadest possible signature and ratification of the Treaty, especially on the part of those 44 countries required for EIF. Work must be done to persuade countries of the value of the CTBT as an indispensable part of the nuclear disarmament process, that EIF—and the full operation of the verification regime—will contribute to a more stable international environment and pave the way for further reductions of nuclear weapons. All members of the international community should be encouraged to see their way clear to sign and ratify the CTBT.
- Giving maximum support to the PrepCom to establish an institutional structure, the International Monitoring System and the International Data Centre, and to put them into provisional operation. It will be important to guard against an unnecessarily cumbersome or expensive structure. With thought and care, a lean and effective PrepCom is within our reach.

Through dedication to these objectives, the international community will be pursuing a central objective of the CTBT—to pave the way for further progress on nuclear disarmament, and to move towards our shared goal of a world free of nuclear weapons.

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NUCLEAR FREE ZONES

The idea of nuclear free zones has been discussed in the General Assembly and elsewhere on many occasions since 1956, and with respect to many geographical areas, including the Balkans, the Adriatic, the Mediterranean, the Middle East, the Nordic countries, Asia and the Pacific. Formal plans and proposals, however, have dealt chiefly with Central Europe, Africa and Latin America, and the last two have been the subject of resolutions of the General Assembly.

In general, the Soviet Union and its allies have favoured the establishment of denuclearised zones in various parts of the world, but placed particular emphasis on Central Europe and those regions where the danger of nuclear conflict seemed greatest and foremost. The Soviet Union also stated that it would respect the denuclearised status of the territory of even a single country if the Western powers would also do so. The United States and its allies, on the other hand, conceived of nuclear free zones largely in the context of preventing the further spread of nuclear weapons and laid down certain criteria, including the following, for their selection: any proposal for a nuclear free zone should be acceptable to the countries of the geographical area in which the zone would be located, should provide for arrangements for verifying that the commitments undertaken are carried out and should be consistent with the generally accepted principle that no disarmament measures should create a unilateral advantage for any State or group of States. Central Europe, they maintained, raised special problems linked to general disarmament and political settlements in the area.

Since the General Assembly's sixteenth session, Sweden has favoured nuclear free zones as a means for non-nuclear powers to take the initiative in their own hands and reach agreements among themselves. Its proposal, contained in resolution 1664 (XVI) (*see page 265*), for the creation of a "non-nuclear club" was conceived in this spirit.

Central Europe

Soviet proposals for disarmament advanced in the Disarmament Sub-Committee in 1956 and 1957, included provisions for ensuring that no atomic weapons were included in the armaments of troops on German territory.¹

On 2 October 1957, at the General Assembly's twelfth session, the Foreign Minister of Poland, A. Rapacki, declared that after consultations with other members of the Warsaw Pact, Poland was willing to accept a prohibition on the production and stockpiling of nuclear weapons on its territory if West Germany and East Germany would accept, simultaneously, the same restrictions on their own territory. Czechoslovakia announced its willingness to accede to the plan.

After East Germany had endorsed the plan, the proposal was elaborated and published by the Polish Government on 14 February 1958 in the form of a memorandum which was sent to the Governments of the USSR, the United States, the United Kingdom, France, Czechoslovakia, East Germany, West Germany, Belgium, Denmark and Canada. It provided for a nuclear free zone covering Poland, Czechoslovakia, East Germany and West Germany. In this area there would be no manufacture or stockpiling of nuclear weapons or secondary installations; the use of nuclear weapons against this area would be forbidden; France, the United Kingdom, the Soviet Union and the United States would undertake to respect the atom-free status of the zone; a broad system of ground and air control would be set up, with inspection posts, to guarantee the observance of these commitments; the policing apparatus would consist of representatives of NATO, the Warsaw Pact and non-aligned States; and, in order to avoid complications that might be involved in the conclusion of a formal treaty, unilateral declarations by the Governments concerned, which would have the force of international undertakings, would be sufficient. These proposals were found unacceptable to the main Western powers, because they contained no limitations on conventional forces and because they made no contribution to the reunification of Germany, the central political issue.

In an effort to meet some of the objections, Rapacki, on 4 November 1958, submitted a new version of the plan, proposing its implementation in two stages: a freeze of nuclear armaments in the proposed zone; and a reduction of conventional forces effected simultaneously with the complete denuclearisation of the zone carried out under appropriate control.

A third version of the plan was submitted by Poland in the ENDC in Geneva on 28 March 1962.² It envisaged that, in addition to the countries originally to be included, the proposed zone would be open to any European State wishing to accede. Its purpose was “to eliminate nuclear weapons and the means of delivering them, and to reduce armed forces and conventional armaments within a limited area in which these measures could help to reduce tension and substantially to limit the danger of conflict”. The plan was to be implemented in two stages: freezing of nuclear weapons and rockets and prohibition of the establishment of new bases; and elimination of nuclear weapons and rockets and reduction of armed forces and conventional armaments.

A further variant of the Polish proposals, known as the Gomulka plan, was conveyed to the countries concerned on 29 February 1964 and was discussed in the ENDC. Relating to the same geographical area, this plan proposed a freeze at existing levels of “nuclear and thermo-nuclear charges, irrespective of the means of their employment and delivery”, accompanied by controls to be established in nuclear plants in the area and at points of access by road, rail, sea and air. The control would be exercised by commissions composed of representatives of the Warsaw Pact and NATO on a parity basis. Unlike earlier versions of the Polish proposals, the Gomulka plan did not seek any reduction in nuclear weapons already in the area covered.

Since then, Poland has often reaffirmed the validity of its proposal of 1957, as elaborated in the following years, and that of 1964. The USSR, in its memorandum of 1 July 1968 on some urgent measures for stopping the arms race and for disarmament, also restated that it was in favour of establishing denuclearised zones in various parts of the world, in view of the fact that such a measure could “effectively limit the area of distribution of nuclear weapons and be fully consistent with the objective of preventing their direct or indirect proliferation”.

Africa

During the Assembly’s fifteenth session, in 1960, the year in which France had conducted its first nuclear test explosions in the Sahara, several African countries launched an effort to have their continent considered a nuclear free zone.

In December 1960, Ethiopia, Ghana, Guinea, Mali, Morocco, Nigeria, the Sudan and the United Arab Republic submitted a draft resolution³ which would have the General Assembly request all States to refrain from carrying out or continuing to carry out nuclear or ballistic weapons

tests in Africa and to eliminate, and refrain from establishing, bases and launching sites in Africa intended for use in testing, storing or transporting such weapons, and would invite all States to regard and respect the African continent as a nuclear free zone. The draft resolution was not, however, put to the vote that year.

The following year, at the Assembly's sixteenth session, a revised draft resolution⁴ aimed at making Africa a "denuclearised zone" was proposed by the same eight African States, joined by six others—the Democratic Republic of the Congo, Liberia, Sierra Leone, Somalia, Togo and Tunisia.

The United States observed that the draft resolution might interfere with the over-all approach to disarmament, which was meant to cover all areas and all weapons. The provision in the draft text on testing was not acceptable because it called for an uninspected and uncontrolled moratorium.

The United Kingdom wondered whether, in the absence of effective international verification, there could be a guarantee that Africa would remain atom-free. It also maintained that it was not for the Assembly to impose obligations on African States with respect to the use of their territory. France supported the latter point and felt that it was dangerous to begin disarmament with measures that either were not real disarmament measures or could not be effectively controlled.

Poland regretted that the revised text no longer called for the elimination of foreign bases in Africa as had the original version. The Soviet Union contended that adoption of the draft resolution would help to improve the atmosphere for disarmament negotiations and also to prevent the dissemination of nuclear weapons.

The Ivory Coast and Upper Volta considered that the proper procedure was for the Heads of African States to discuss the matter; only after they had agreed on a convention governing disarmament and military bases, as well as nuclear weapons and tests, should the General Assembly be asked to endorse and guarantee such a convention.

On 24 November 1961, the fourteen-power draft resolution, as amended, was adopted by the Assembly by 55 votes to 0, with 44 abstentions, as resolution 1652 (XVI).⁵ It reads as follows:

The General Assembly,

Recalling its resolutions 1378 (XIV) of 20 November 1959 on general and complete disarmament, 1379 (XIV) of 20 November 1959 on the

question of French nuclear tests in the Sahara, 1576 (XV) of 20 December 1960 on the prevention of the wider dissemination of nuclear weapons, and 1577 (XV) and 1578 (XV) of 20 December 1960 on the suspension of nuclear and thermo nuclear tests,

Recalling further its resolution 1629 (XVI) of 27 October 1961, which declared that both concern for the future of mankind and the fundamental principles of international law impose a responsibility on all States concerning actions which might have harmful biological consequences for the existing and future generations of peoples of other States, by increasing the levels of radio-active fall-out,

Concerned about the present rate of nuclear armament and the possible spread of nuclear weapons, as well as the resumption of nuclear tests in the continent of Africa which is being emancipated,

Recognising the need to prevent Africa from becoming involved in any competition associated with the ideological struggles between the Powers engaged in the arms race and, particularly, with nuclear weapons,

Recognising further that the task of economic and social development in the African States requires the uninterrupted attention of those States in order to allow them to fulfil their goals and to contribute fully to the maintenance of international peace and security,

Calls upon Member States:

- (a) To refrain from carrying out or continuing to carry out in Africa nuclear tests in any form;
- (b) To refrain from using the territory, territorial waters or air space of Africa for testing, storing or transporting nuclear weapons;
- (c) To consider and respect the continent of Africa as a denuclearised zone.

In 1963, Ethiopia, Nigeria and the United Arab Republic submitted in the ENDC the disarmament resolution⁶ adopted by the Summit Conference of Independent African States held at Addis Ababa from 22 to 25 May 1963. The resolution contained, *inter alia*, provisions for concerted action towards the goal of making Africa a nuclear free zone.

The item entitled "Declaration on the denuclearisation of Africa" was included in the agenda of the Assembly's twentieth session, in 1965, at the request of thirty-four African countries.⁷

On 26 November, a draft resolution⁸ was submitted by twenty-eight African countries whereby the General Assembly would call upon all States to refrain from the use, or the threat of use, of nuclear weapons and from testing, manufacturing, acquiring, using or deploying nuclear weapons on the continent of Africa, and urge those States possessing nuclear weapons and capability not to transfer nuclear weapons, scientific data or technological assistance to the national control of any State which may be used to assist such States in the manufacture or use of nuclear weapons in Africa. The draft also expressed the hope that the African States would take the necessary measures through the Organisation of African Unity (OAU) to achieve the denuclearisation of Africa.

The sponsors of the draft supported, in principle, proposals for nuclear free zones in various parts of the world as a first step towards non-proliferation. They considered that the denuclearisation of Africa was primarily the concern of the OAU though they recognised that the United Nations had a role to play and that its assistance would be needed for the realisation of the denuclearisation of Africa and for securing support for denuclearisation from powers outside the continent.

The United Kingdom reserved the right to determine its attitude on the basis of the efforts to be undertaken by the OAU. The United States, while giving the African initiative its enthusiastic support, reserved its position with regard to arrangements to give legal effect to the declaration. It stated that the legal instrument would be judged by the degree to which all States in the area were included, by the absence of any military advantage for a State or group of States as a result of the zone, and by the provision for adequate verification. In this connexion, the United States hoped that African States would accept IAEA safeguards on civil nuclear installations similar to those under consideration by Latin American States. As to the pledge not to use nuclear weapons, the United States recalled its position that it could not subscribe to declarations or pledges of non-use of nuclear weapons outside the framework of general and complete disarmament.

The Soviet Union supported without reservation the aspirations of the African States to create a denuclearised zone and was prepared to respect all denuclearised zones if other Powers would assume the same obligation.

Portugal and South Africa asserted their full agreement with the objectives of the draft resolution but objected to the role of the OAU in its implementation.

The General Assembly adopted the draft resolution on 3 December 1965, by 105 votes to none, with 3 abstentions, as resolution 2033 (XX)⁹ It reads as follows:

The General Assembly,

Believing in the vital necessity of saving contemporary and future generations from the scourge of a nuclear war,

Recalling its resolution 1652 (XVI) of 24 November 1961, which called upon all Member States to refrain from testing, storing or transporting nuclear weapons in Africa and to consider and respect the continent as a denuclearised zone,

Recalling its resolution 2028 (XX) of 19 November 1965 on the non-proliferation of nuclear weapons,

Observing that proposals for the establishment of denuclearised zones in various other areas of the world have also met with general approval,

Convinced that the denuclearisation of various areas of the world would help to achieve the desired goal of prohibiting the use of nuclear weapons,

Considering that the Assembly of Heads of State and Government of the Organisation of African Unity, at its first regular session, held at Cairo from 17 to 21 July 1964, issued a solemn declaration on the denuclearisation of Africa in which the Heads of State and Government announced their readiness to undertake, in an international treaty to be concluded under the auspices of the United Nations, not to manufacture or acquire control of nuclear weapons,

Noting that this declaration on the denuclearisation of Africa was endorsed by the Heads of State or Government of Non-Aligned Countries in the Declaration issued on 10 October 1964 at the close of their Second Conference, held at Cairo,

Recognising that the denuclearisation of Africa would be a practical step towards the prevention of the further spread of nuclear weapons in the world and towards the achievement of general and complete disarmament and of the objectives of the United Nations,

1. *Reaffirms* its call upon all States to respect the continent of Africa as a nuclear free zone;
2. *Endorses* the declaration on the denuclearisation of Africa issued by the Heads of State and Government of African countries;

3. *Calls upon* all States to respect and abide by the aforementioned declaration;
4. *Calls upon* all States to refrain from the use, or the threat of use, of nuclear weapons on the African continent;
5. *Calls upon* all States to refrain from testing, manufacturing, using or deploying nuclear weapons on the continent of Africa, and from acquiring such weapons or taking any action which would compel African States to take similar action;
6. *Urges* those States possessing nuclear weapons and capability not to transfer nuclear weapons, scientific data or technological assistance to the national control of any State, either directly or indirectly, in any form which may be used to assist such States in the manufacture or use of nuclear weapons in Africa;
7. *Expresses the hope* that the African States will initiate studies, as they deem appropriate, with a view to implementing the denuclearisation of Africa, and take the necessary measures through the Organisation of African Unity to achieve this end;
8. *Urges* the African States to keep the United Nations informed of any further developments in this regard;
9. *Requests* the Secretary-General to extend to the Organisation of African Unity such facilities and assistance as may be requested in order to achieve the aims of the present resolution.

Since the adoption of this resolution, there have been no further developments pertaining to Africa in this field, although various African and other countries have from time to time expressed interest in giving the principles of resolution 2033 (XX) concrete application, perhaps, in the manner of the Latin-American nuclear free zone.

Latin America

At the seventeenth session of the General Assembly, in 1962. Brazil submitted a draft resolution,¹⁰ co-sponsored by Bolivia, Chile and Ecuador, concerning the establishment of a denuclearised zone in Latin America. The Assembly decided, however, to defer consideration of this proposal to the eighteenth session, at which Brazil requested the inclusion of "Denuclearisation of Latin America" as a separate item in the agenda."

In the interim between the two sessions, the Presidents of Bolivia, Brazil, Chile, Ecuador and Mexico, on 29 April 1963, issued the following declaration.¹²

The Presidents of the Republics of Bolivia, Brazil, Chile, Ecuador and Mexico,...

In the name of their peoples and Governments have agreed at follows:

1. To announce forthwith that their Governments are prepared to sign a multilateral agreement whereby countries would undertake not to manufacture, receive store or test nuclear weapons or nuclear launching devices;
2. To bring this declaration to the attention of the Heads of State of the other Latin American Republics, expressing the hope that their Governments will accede to it, through such procedures as they consider appropriate;
3. To co-operate, with one another and with such other Latin American Republics as accede to this declaration, in order that Latin America may be recognised as a denuclearised zone as soon as possible.

At the eighteenth session, a draft resolution¹³ was submitted jointly by eleven Latin American States (Bolivia, Brazil, Chile, Costa Rica, Ecuador, El Salvador, Haiti, Honduras, Mexico, Panama and Uruguay) by which the General Assembly would note with satisfaction the joint declaration of the five Presidents and would express the hope that the States of Latin America would initiate appropriate studies with a view to achieving the aims of that, declaration.

In submitting the eleven-power draft resolution, Brazil said that the sponsors were merely seeking the encouragement of the world community. The proposed Latin American nuclear free zone met the criteria of being outside great Power confrontation and did not disturb the existing power balance.

Mexico interpreted the term "denuclearisation" to mean the prohibition of nuclear weapons and nuclear launching devices and not to refer to nuclear energy used for peaceful purposes.

Colombia felt the proposed Latin American nuclear free zone would have to include also all the countries of the Caribbean region, as well as the extra-continental and continental powers in the geographical area of Mexico, Central America, the Caribbean region and South America. Uruguay considered it was for the Latin American States themselves to discuss the modalities of a multilateral agreement and to set conditions and reservations, as well as to determine the juridical

duty of the nuclear Powers, as a counterpart of the assurances that a denuclearised Latin America could offer them. Panama considered that the zone should include the entire continental area "extending from the Rio Bravo to Cape Horn and all the Latin American islands, including the new States of the Caribbean... as well as all the off-shore islands of Latin America that have not yet acquired independence". Jamaica stated that the arrangements would have to include provisions regarding boundaries, types of weapons and installations prohibited, belligerent rights, verification and sanctions.

Cuba expressed support in principle for the Latin American initiative, but objected to the failure to provide the necessary elements of security. Until the United States had given assurances regarding the denuclearisation of Puerto Rico, the Panama Canal Zone and other United States naval bases in the area, and also regarding the withdrawal of military forces from Guantanamo, Cuba could not accept the draft resolution. Moreover, the essential prerequisite was the elimination of atomic weapons from Latin American territories and the liquidation of all foreign military bases.

Venezuela stated that the non-inclusion of certain geographically close areas would render the measures provided for under the draft inoperative as far as Venezuela was concerned.

The United States welcomed the draft resolution and promised its support in the belief that, under appropriate circumstances, a Latin American nuclear free zone would be a most constructive contribution to the cause of peace. While any ultimate decision should be left to the Latin American States themselves, the United States believed that verification -measures, as well as the inclusion of all States in the area concerned, were essential requirements if the proposed zone were to be effectively denuclearised. If the States of Latin America arrived at an agreement which met the criteria laid down by the United States, it would respect the agreement.

The Soviet Union and Eastern European States viewed the Latin American initiative as consistent with their conviction that the creation of denuclearised zones in various parts of the world could prevent wider dissemination of nuclear weapons and reduce the threat of nuclear war. However, they supported the position of Cuba.¹⁴

The General Assembly, on 27 November 1963, adopted the draft resolution by 91 votes to none, with 15 abstentions, as resolution 1911 (XVIII).¹⁵ It reads as follows:

The General Assembly,

Bearing in mind the vital necessity of sparing present and future generations the scourge of a nuclear war,

Recalling its resolutions 1380 (XIV) of 20 November 1959, 1576 (XV) of 20 December 1960 and 1665 (XVI) of 4 December 1961, in which it recognised the danger that an increase in the number of States possessing nuclear weapons would involve, since such an increase would necessarily result in an intensification of the arms race and an aggravation of the difficulty of maintaining world peace, thus, rendering more difficult the attainment of a general disarmament agreement,

Observing that in its resolution 1664 (XVI) of 4 December 1961 it stated explicitly that the countries not possessing nuclear weapons had a grave interest and an important part to fulfil in the preparation and implementation of measures that could halt further nuclear weapon tests and prevent the further spread of nuclear weapons,

Considering that the recent conclusion of the treaty banning nuclear weapon tests in the atmosphere, in outer space and under water, signed on 5 August 1963, has created a favourable atmosphere for parallel progress towards the prevention of the further spread of nuclear weapons, a problem which, as indicated in General Assembly resolutions 1649 (XVI) of 8 November 1961 and 1762 (XVII) of 6 November 1962, is closely connected with that of the banning of nuclear weapon tests,

Considering that the Heads of State of five Latin American Republics issued, on 29 April 1963, a declaration on the denuclearisation of Latin America in which, in the name of their peoples and Governments, they announced that they are prepared to sign a multilateral Latin American agreement, whereby their countries would undertake not to manufacture, receive, store or test nuclear weapons or nuclear launching devices,

Recognising the need to preserve, in Latin America, conditions which will prevent the countries of the region from becoming involved in a dangerous and ruinous nuclear arms race,

1. *Notes with satisfaction* the initiative for the denuclearisation of Latin America taken in the joint declaration of 29 April 1963;
2. *Expresses the hope* that the States of Latin America will initiate studies, as they deem appropriate, in the light of the principles of the Charter of the United Nations and of regional agreements

and by the means and through the channels which they deem suitable, concerning the measures that should be agreed upon with a view to achieving the aims of the said declaration;

3. *Trusts* that at the appropriate moment, after a satisfactory agreement has been reached, all States, particularly the nuclear Powers, will lend their full co-operation for the effective realisation of the peaceful aims inspiring the present resolution;
4. *Requests* the Secretary General to extend to the States of Latin America, at their request, such technical facilities as they may require in order to achieve the aims set forth in the present resolution.

At its nineteenth session, the Assembly had before it the text of the Final Act of Preliminary Meeting on the Denuclearisation of Latin America.¹⁶ At the meeting, which had been held in Mexico City from 23 to 27 November 1964 and had been attended by representatives of seventeen Latin American countries, it had been decided to establish a Preparatory Commission to prepare a preliminary draft of a multilateral treaty for the denuclearisation of Latin America.

Owing to the special circumstances prevailing at the nineteenth session, the Assembly took no action on the question.

In the introduction to his Annual Report for 1965, the Secretary-General commented on the efforts for the denuclearisation of Latin America:¹⁷

One hopeful development... is to be found in the efforts of States of Latin America. Since the adoption of General Assembly resolution 1911 (XVIII) of 27 November 1963 on the denuclearisation of Latin America, they have made good progress towards an agreement to keep their territories free of nuclear weapons. Success in their endeavours will not only be an achievement of great benefit to the States of Latin America, militarily, politically, economically and socially; it can, indeed, be of great importance to the world at large. It may well have a catalytic effect on other initiatives for denuclearisation, for preventing the further spread of nuclear weapons, and for other measures of disarmament.

At the Assembly's twentieth session, Mexico described the efforts of the Preparatory Commission, which had been reported to the Assembly¹⁸ and which had resulted in a preliminary text for a draft treaty containing fourteen articles defining obligations and a system of verification based on IAEA safeguards. Brazil called attention to

two basic prerequisites which had yet to be resolved: (a) agreement on the geographical demarcation of the zone under the treaty; and (b) assurances from all nuclear Powers to respect fully the juridical status of the zone. Mexico expressed the opinion that the area to be covered could be automatically delimited as the sum total of all the territories of the States which were or might become parties to the denuclearisation treaty and of those territories concerning which the responsible Governments were prepared to assume the same obligations as those assumed by the Latin American States. Chile expressed disappointment that difficulties had been encountered in obtaining unreserved guarantees from all the nuclear Powers to respect the denuclearised character of the zone, and suggested that a treaty might be concluded with the support of those who were in agreement.

Efforts continued in 1966 to reach agreement on a treaty for denuclearisation of Latin-America.¹⁹ The situation at the opening of the twenty-first session of the General Assembly was described by the Secretary-General, in the introduction to his annual report on the work of the Organisation for 1965-66, as follows:²⁰

I find some encouragement in the progress made during the past year towards the denuclearisation of Latin America. The countries engaged in this effort have broken new ground in elaborating the text of a draft treaty, and if they can agree on a treaty that would eliminate nuclear weapons and avoid a potential nuclear arms race for the whole or a part of their area of the world, it would make a considerable step forward both in the non-proliferation of nuclear weapons and in disarmament generally. Such a treaty could point the way to, and might perhaps become a model for, the denuclearisation of Africa and other areas of the world and, if it received the support of the nuclear powers, would also help to reduce the size of the problem of proliferation and give a much needed impetus to other disarmament measures.

Treaty for the Prohibition of Nuclear Weapons in Latin America

At the end of January 1967, the negotiations on a treaty for the denuclearisation of Latin America entered the final stage. These negotiations led to the signing at Mexico City (borough of Tlatelolco), on 14 February 1967, of the Treaty for the Prohibition of Nuclear Weapons in Latin America (*for text of the Treaty, see appendix VIII*). In a message to the Preparatory Commission for the Denuclearisation of Latin America on the occasion of the successful conclusion of the treaty, the Secretary-General stated:²¹

The Treaty for the Prohibition of Nuclear Weapons in Latin America marks an important milestone in the long and difficult search for

disarmament. It takes its place together with the Antarctic Treaty of 1959, the Nuclear Test Ban Treaty of 1963, and the Outer Space Treaty of January 1967 in establishing limits to the nuclear arms race. It provides the statute for the creation, for the first time in history, of a nuclear free zone for an inhabited portion of the earth.

The provisions of the treaty also mark a major step forward in the field of verification and control. Among the treaties I have mentioned, the one you have today approved is the first and only one that establishes an effective system of control, under a permanent and supervisory organ.

The treaty, composed of a preamble, 31 articles, one transitional article, and two additional protocols, in addition to setting out the obligations of the States party to it, contained provisions for: defining the term "nuclear weapon"; the establishment of an international agency for the prohibition of nuclear weapons in Latin America to ensure compliance with the Treaty (including a safeguards system to be negotiated with the IAEA); the development of peaceful uses of nuclear energy (including the use of nuclear explosions for peaceful purposes); the zone of application of the Treaty; relations with other international organisations; measures in the event of violation of the treaty; settlement of disputes; entry into force; amendments; duration; and denunciation.

The main obligations of the parties to the treaty were defined in article 1 of the Treaty. In brief, the contracting parties would undertake to use exclusively for peaceful purposes the nuclear material and facilities under their jurisdiction, and to prohibit and prevent in their respective territories: (a) the testing, use, manufacture, production or acquisition by any means whatsoever of any nuclear weapons, by the parties themselves directly or indirectly, on behalf of anyone else, or in any other way; and (b) the receipt, storage, installation, deployment and any form of possession of any nuclear weapons, directly or indirectly, by the parties themselves, by anyone on their behalf, or in any other way. Further, they would undertake to refrain from engaging in, encouraging, or authorising, directly or indirectly, or in any way participating in, the testing, use, manufacture, production, possession or control of any nuclear weapon.

Nuclear weapons were defined in article 5 of the Treaty as "any device which is capable of releasing nuclear energy in an uncontrolled manner and which has a group of characteristics that are appropriate for use for warlike purposes".

Under article 7 of the Treaty, the parties would undertake to establish an international organisation to be known as the "Agency for the

Prohibition of Nuclear Weapons in Latin America”, which was to ensure compliance with the obligations of the Treaty. For the purpose of verifying compliance, a control system was to be put into effect, in accordance with provisions contained in articles 13-18, which included safeguards to be negotiated with the IAEA, periodic reports of the parties, special reports requested by the Secretary-General of the new organisation and special inspections, outside of the Agency’s safeguards system, in the case of suspicion of violations.

The right of the contracting parties to use nuclear energy for peaceful purposes, in particular for their economic development and social progress, was set out in article 17 of the Treaty. Conditions for explosions of nuclear devices for peaceful purposes—including explosions which involved devices similar to those used in nuclear weapons—were provided for in article 18.

Additional Protocol I of the Treaty provided that the extraterritorial powers (France, the Netherlands, the United Kingdom and the United States) controlling certain territories situated within the limits of the Latin American geographical zone, as defined in the Treaty, would undertake to apply the statute of denuclearisation in those territories for which, *de jure* or *de facto*, they were internationally responsible. Additional Protocol II provided that the nuclear weapons Powers would undertake fully to respect the status of denuclearisation of Latin America and also would undertake not to use or threaten to use nuclear weapons against the parties to the Treaty.

Consideration by the General Assembly 1967

Questions pertaining to the Treaty were discussed at the General Assembly’s twenty-second session on the basis of a request by twenty-one Latin American countries. In the course of the debate in the Assembly, a draft resolution was submitted by twenty Latin American Members, which, as revised,²² *inter alia*, welcomed with special satisfaction the Treaty; called for its observance; and invited the Powers contemplated in Additional Protocols I and II to sign and ratify two documents. The draft was adopted by the General Assembly on 5 December 1967, by a vote of 82 to 0, with 28 abstentions, as resolution 2286 (XXII). France and the USSR abstained, while the United Kingdom and the United States voted in favour. The resolution reads as follows:

The General Assembly,

Recalling that in its resolution 1911 (XVIII) of 27 November 1963 it expressed the hope that the States of Latin America would carry out

studies and take appropriate measures to conclude a treaty that would prohibit nuclear weapons in Latin America,

Recalling also that in the same resolution it voiced its confidence that, once such a treaty was concluded, all States, and particularly the nuclear Powers, would lend it their full co-operation for the effective realisation of its peaceful aims,

Considering that in its resolution 2028 (XX) of 19 November 1965 it established the principle of an acceptable balance of mutual responsibilities and obligations of the nuclear and non-nuclear Powers,

Bearing in mind that in its resolution 2153 A (XXI) of 17 November 1966 it expressly called upon all nuclear weapon powers to refrain from the use, or the threat of use, of nuclear weapons against States which might conclude regional treaties in order to ensure the total absence of nuclear weapons in their respective territories,

Noting that that is precisely the object of the Treaty for the Prohibition of Nuclear Weapons in Latin America, signed at Tlatelolco, Mexico, by twenty-one Latin American States, which are convinced that the Treaty will constitute a measure that will spare their peoples the squandering of their limited resources on nuclear armaments and will protect them against possible nuclear attacks on their territories, that it will be a stimulus to the peaceful use of nuclear energy in the promotion of economic and social development and that it will act as a significant contribution towards preventing the proliferation of nuclear weapons and as a powerful factor for general and complete disarmament,

Noting that it is the intent of the signatory States that all existing States within the zone defined in the Treaty may become parties to the Treaty without any restriction,

Taking note of the fact that the Treaty contains two additional protocols open, respectively, to the signature of States which, *de jure* or *de facto*, are internationally responsible for territories which lie within the limits of the geographical zone established in the Treaty and to the signature of States possessing nuclear weapons, and convinced that the co-operation of such States is necessary for the greater effectiveness of the Treaty,

1. *Welcomes with, special satisfaction* the Treaty for the Prohibition of Nuclear Weapons in Latin America, which constitutes an event of historic significance in the efforts to prevent the proliferation of nuclear weapons and to promote international peace and security and which at the same time establishes the

right of Latin American countries to use nuclear energy for demonstrated peaceful purposes in order to accelerate the economic and social development of their peoples;

2. *Calls upon* all States to give their full co-operation to ensure that the regime laid down in the Treaty enjoys the universal observance to which its lofty principles and noble aims entitle it;
3. *Recommends* States which are or may become signatories of the Treaty and those contemplated in Additional Protocol I of the Treaty to strive to take all the measures within their power to ensure that the Treaty speedily obtains the widest possible application among them;
4. *Invites* Powers possessing nuclear weapons to sign and ratify Additional Protocol II of the Treaty as soon as possible.

In the debate, the Treaty was generally welcomed as a major step forward, aimed at preventing the spread of nuclear weapons and limiting the use of nuclear energy to peaceful purposes only, and whose scope was even broader than that of the treaty on non-proliferation of nuclear weapons. It was the first agreement, various members stressed, to establish a nuclear free zone in an inhabited area, and the treaty had set an example for other areas as well. Appreciation was also expressed that the Treaty envisaged the establishment of a comprehensive control system, including a system of safeguards to be negotiated with the IAEA with regard to peaceful nuclear activities. Also noted with appreciation was the Treaty's reliance on a regime of special inspections with regard to suspected clandestine activities.

The United States believed that the four following requirements had to be met for the establishment of nuclear free zones: (1) the initiative was to originate within the area concerned; (2) the zone was to include all States deemed important; (3) its creation was not to disturb necessary security arrangements; and (4) provisions were to be made for follow-up on alleged violations in order to give reasonable assurance of compliance. The Latin American Treaty, in the opinion of the United States, met these requirements.

There were, however, some reservations. The USSR considered that some of the provisions of the Treaty (for example, those concerning explosions of nuclear devices for peaceful purposes) and the lack of provisions (on preventing or prohibiting, for instance, the transporting of nuclear weapons through the territories of contracting parties)

introduced elements of ambiguity in the Treaty. It also appeared, the USSR added, that nuclear weapons would remain in Puerto Rico and in other Latin American areas which the United States did not wish to include in the denuclearised zone, and they would also continue to appear inside; the unclear-free zone, in the Panama Canal. Moreover, according to article 4 of the Treaty, the zone to which the Treaty would apply would encompass huge areas of the Atlantic and Pacific oceans, hundreds of kilometres beyond the territorial waters of States signing the Treaty.

In reply, Mexico asserted that the transport of nuclear weapons was prohibited for the parties to the Treaty, and under international law, a party could grant permission for transit to other States. The consensus of the Preparatory Commission for the Denuclearisation of Latin America (which had worked out the text of the Treaty) had been that transit by land was excluded, and that maritime or air transit at the discretion of the riparian State must be subject to the "right of innocent passage" provisions of the 1958 Geneva Convention on territorial and contiguous seas. As to the Panama Canal, Mexico noted that the United States, in a letter dated 10 December 1965 to the Chairman of the Preparatory Commission, had expressed readiness to include the Panama Canal Zone, provided the established transit rights were not affected.

Some Members, including Canada, Pakistan, Poland and the USSR, expressed reservations on the provisions of the Treaty relating to explosions of nuclear devices for peaceful purposes. Mexico, in reply, said that such explosions could be carried out directly by parties to the Treaty only if they did not require the use of a nuclear device which was similar to a nuclear weapon as defined in article 5 of the Treaty. Article 18 laid down further conditions concerning such matters as notification of nuclear explosions for peaceful purposes, verification, and collaboration of third parties in explosion of nuclear devices for peaceful purposes.

In this connexion, Brazil recalled its note to the Mexican Government upon signing the Treaty, wherein Brazil reaffirmed its interpretation of the meaning of article 18 as allowing the signatory States to carry out with their own means, or in association with third parties, nuclear explosions for peaceful purposes, including explosions which might involve devices similar to those used in nuclear weapons.

The United States noted that Cuba was the only Latin American country which had refused to sign the Treaty. Cuba declared that it

would consider becoming a party to the Treaty only if it included the denuclearisation and abolition of United States military bases in Panama, Puerto Rico and Guantanamo.

Further Developments

In 1968, at the Conference of Non-Nuclear Weapon States, a resolution on the establishment of nuclear weapon free zones, co-sponsored by sixteen Latin American countries, was adopted. By this resolution,²³ the Conference, recalling General Assembly resolution 2286 (XXII) of 5 December 1967, recommended that all non-nuclear weapon states not comprised in the zone established by the Treaty of Tlatelolco initiate or continue studies concerning the possibility and desirability of establishing by treaty the military denuclearisation of their respective zones, provided that political and security conditions permitted. It also regretted the fact that not all the nuclear weapon states had yet signed Additional Protocol II of the Treaty of Tlatelolco and urged the nuclear weapon Powers to comply fully with the relevant provision of resolution 2286 (XXII), inviting nuclear weapon Powers to sign and ratify the Protocol as soon as possible.

Entry into Force of the Treaty and Establishment of OPANAL

In June 1969, the Treaty having been ratified by, and entered into force for, the requisite number of countries, a preliminary meeting was held in Mexico City, on the establishment of the Agency for the Prohibition of Nuclear Weapons in Latin America (OPANAL). In September, the General Conference, the highest organ of the Agency, held its first session.²⁴

On the eve of the twenty-fourth session of the General Assembly, the Secretary-General, in the introduction to his annual report on the work of the Organisation for 1968-69, noted the following:²⁵

The Treaty of Tlatelolco has been ratified by the requisite number of countries and the Agency for the Prohibition of Nuclear Weapons in Latin America has now been established. I was glad to be able to address, on 2 September in Mexico City, the first session of the General Conference of the Agency. It is a matter of profound satisfaction that the structure of this project, to which the General Assembly first gave its support in 1963 by resolution 1911 (XVIII), has now been formally constituted. It is my hope that, pursuant to the General Assembly resolutions in that regard, additional signatures and ratifications of the Treaty and of its Additional Protocol II will be forthcoming soon to ensure that all the States of that area will not manufacture or acquire nuclear weapons and that the nuclear weapon Powers will not station, deploy, use or threaten

to use such weapons against any of the States in the nuclear weapon free zone. The continuing efforts and the steady progress made by the States of Latin America, which have now come to fruition, are deserving of the highest admiration and praise. They have given an exemplary demonstration of what can be achieved, given the moral commitment, careful planning and persistence. They have successfully pioneered an important step towards disarmament and the expansion of peaceful uses of nuclear energy and have given the world some novel ideas in the field of control. I am hopeful that the system established by the Treaty of Tlatelolco will provide a model for other nuclear weapon free zones as well as for additional measures of global disarmament.

By early 1970, the Treaty of Tlatelolco was in force in seventeen of its twenty-two signatory States. Protocol I had been signed by the Netherlands and the United Kingdom and ratified by the latter. Protocol II had been signed by the United Kingdom and the United States and ratified by the former.

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1. *Official Records of the Disarmament Commission, Supplement for January to December 1956*, document DC/83, annex 5 (DC/SC.1/41 and Corr.1).
2. Document KNDC/C. 1/1.
3. *Official Records of the General Assembly, Fifteenth Session, Annexes*, agenda items 67, 86, 69 and 73, document A/4680, para. 17 (A/C.1/L.264/Rev.1).
4. *Ibid.*, *Sixteenth Session, Annexes*, agenda items 73 and 72, document A/C.1/L.291/Rcv.1 and Add.1-3.
5. *Ibid.* plenary meetings 1063rd meeting.
6. *Official Records of the Disarmament Commission, Supplement for January to December 1963*, document DC/208, annex 1, section G (ENDC/93/Rev.1).
7. *Official Records of the General Assembly, Twentieth Session, Annexes*, agenda item 105. document A/5975.
8. *Ibid.*, document A/6127, para. 4 (A/C.1/L.346).
9. *Ibid.*, *Plenary Meetings*, 1388th meeting.
10. *Ibid.*, *Seventeenth Session, Annexes*, agenda item 90, document A/C.1/L.312/Rev.1-2 and Add.1.
11. *Ibid.*, *Eighteenth Session, Annexes*, agenda item 74, document A/5447 and Add.1.
12. *Ibid.*, document A/5415/Rev.1.
13. *Ibid.*, document A/5618, para. 4 (A/C.1/L.329/Add.1).
14. *Ibid.*, *First Committee*, 1309th, 1321st-1330th, 1333rd-1337th, 1339th-1341st meetings.

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15. *Ibid.*, *Plenary Meetings*, 1265th meeting.
 16. Document A/5824.
 17. *Ibid.*, *Twentieth Session, Supplement No. IA (A/6001/Add.1)*.
 18. Document A/5985.
 19. In the course of the treaty negotiations, several documents were submitted by Mexico, providing evidence of the progress achieved in reaching agreement on the prohibition of nuclear weapons in Latin America. See *Official Records of the General Assembly, Twenty-second Session, Annexes*, agenda item 91, check list of documents.
 20. *Official Records of the General Assembly, Twenty-first Session, Supplement No. 1A (A/6301/Add.1)*.
 21. Press Release SG/SM/661 of 13 February 1967.
 22. *Official Records of the General Assembly, Twenty-second Session, Annexes*, agenda item 91, document A/6921, paras. 5 and 6.
 23. *Official Records of the General Assembly, Twenty-third Session*, agenda item 96, document A/7277, resolution B.
 24. The documentation relating to these developments was included in two documents submitted by Mexico at the twenty-fourth session of the General Assembly: document A/7639 of 28 August 1969 and document A/7681 of 23 September 1969. Previously, at the 1969 session of the ENDC, Mexico had submitted a working document entitled "Establishment of nuclear free zones" (DC/232, annex C, ENDC/241). An addendum to the latter document was submitted by Mexico on 24 March 1970 (CCD/241/Add.1).
 25. Document A/7601/Add.1.

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ESTABLISHMENT OF NUCLEAR WEAPONS FREE ZONES ON THE BASIS OF ARRANGEMENTS FREELY ARRIVED AT AMONG THE STATES OF THE REGION CONCERNED.*

General Overview

1. Recent developments in international relations, especially in the fields of disarmament and non-proliferation, have led to increased efforts to consolidate existing and to establish new nuclear weapon free zones on the basis of arrangements freely arrived at among the States of the region concerned and to a better understanding of the importance of such zones.

2. The Final Document of the Tenth Special Session of the General Assembly¹ stated that the establishment of nuclear weapon free zones on the basis of agreements or arrangements freely arrived at among the States of the zone concerned and the full compliance with those agreements or arrangements, thus ensuring that the zones are genuinely free from nuclear weapons, and respect for such zones by nuclear weapon states constitute an important disarmament measure.

3. In 1993, the Disarmament Commission unanimously adopted "Guidelines and recommendations for the regional approaches to disarmament within the context of global security", which included a substantive consideration of zones free of nuclear weapons and other weapons of mass destruction.

4. The General Assembly has over the years adopted numerous resolutions on the issue of the establishment of nuclear weapon free

* A/54/42, Annex 1.

zones in different regions of the world, which reflects the continuing interest of the international community in the establishment of such zones.

5. Nuclear weapons free zones have ceased to be exceptional in the global strategic environment. To date, 107 States have signed or become parties to treaties-establishing existing nuclear weapon free zones.² With the addition of Antarctica, which was demilitarised pursuant to the Antarctic Treaty, nuclear weapon free zones now cover more than 50 per cent of the Earth's land mass.

Objectives and Purposes

6. As has been universally recognised, nuclear weapon free zones have made and continue to make, as their objective, an important contribution to the strengthening of the international nuclear non-proliferation regime, to the achievement of nuclear disarmament and to global efforts aimed at achieving the ultimate objective of eliminating nuclear weapons and, more broadly speaking, general and complete disarmament under strict and effective international control.

7. Each nuclear weapon free zone is the product of the specific circumstances of the region concerned and highlights the diversity of situations in the different regions. Moreover, the establishment of nuclear weapon free zones is a dynamic process. The experience of existing nuclear weapon free zones clearly shows that these are not static structures and also, in spite of the diversity of situation in different regions, highlights the feasibility of the establishment of the new nuclear weapon free zones on the basis of arrangements freely arrived at among the States of the region concerned.

8. Nuclear weapon free zones help to strengthen the security of the States that belong to such zones.

9. Nuclear weapon free zones are an important disarmament tool which contributes to the primary objective of strengthening regional peace and security and, by extension, international peace and security. They are also considered to be important regional confidence-building measures.

10. Nuclear weapon free zones can also be a means of expressing and promoting common values in the areas of nuclear disarmament, arms control and non-proliferation.

11. For the States parties to the Treaty on the Non-Proliferation of Nuclear Weapons,³ nuclear weapon free zones are an important

complementary instrument to the Treaty, article VII of which explicitly recognises the right of any group of States to conclude regional treaties in order to assure the total absence of nuclear weapons in their respective territories. The decision on “Principles and objectives for nuclear non-proliferation and disarmament” in the Final Document of the 1995 Review and Extension Conferences of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons,⁴ adopted in 1995, reaffirmed the conviction of the States parties to the Treaty on the Non-Proliferation of Nuclear Weapons that the establishment of internationally recognised nuclear weapon free zones, on the basis of arrangements freely arrived at among the States of the region concerned, enhances global and regional peace and security.

12. Nuclear weapon free zones considerably strengthen and increase the nuclear non-proliferation obligations of non-nuclear weapon states parties to the Treaty on the Non-Proliferation of Nuclear Weapons to refrain from acquiring nuclear weapons and to develop and use nuclear energy solely for peaceful purposes and in accordance with the safeguards established by the International Atomic Energy Agency (IAEA).

13. Nuclear weapon free zones are a useful complement to the international regime for the prohibition of any nuclear weapon-test explosions or any other nuclear explosion.

14. By signing and ratifying the relevant protocols to the treaties establishing nuclear weapon free zones, nuclear weapon states undertake legally binding commitments to respect the status of such zones and not to use or threaten to use nuclear weapons against States parties to such treaties.

15. The current nuclear weapon free zones have served and are serving as an example for the establishment of new zones. At the same time, they offer support and the benefit of their experience to States that are considering proposals or proceeding to establish nuclear weapon free zones in other regions,

16. Nuclear weapon free zones may serve, as long as the respective treaty provides therefore, as a framework for international cooperation on the use of nuclear energy for peaceful purposes in the region, which will promote economic, scientific and technological development of the States parties.

17. Nuclear weapon free zones may also serve to promote cooperation aimed at ensuring that the regions concerned remain free of

environmental pollution from radioactive wastes and other radioactive substances and, as appropriate, enforcing internationally agreed standards regulating international transportation of those substances.

Principles and Guidelines

18. The principles and guidelines presented below can be regarded only as a non-exhaustive list of generally accepted observations in the current stage of the development of nuclear weapon free zones and are based on current practices and available experiences, bearing in mind that the process of establishing nuclear weapon free zones should allow for the harmonious implementation of each of these principles and guidelines.

19. The establishment of nuclear weapon free zones is consistent with a variety of objectives. The important contribution of nuclear weapon free zones to the strengthening of the international non-proliferation regime and to regional and world peace and security has been universally recognised.

20. Nuclear weapon free zones should be established on the basis of arrangements freely arrived at among the States of the region concerned.

21. The initiative to establish a nuclear weapon free zone should emanate exclusively from States within the region concerned and be pursued by all the States of that region.

22. In cases where consensus exists on the goal to establish a nuclear weapon free zone in a given region, efforts exerted by the States of the region concerned aimed at the establishment of such a zone should be encouraged and supported by the international community. Assistance should be provided, as appropriate, including through the essential role of the United Nations, to the States of the region concerned in their efforts to establish a nuclear weapon free zone.

23. All the States of the region concerned should participate in the negotiations on and the establishment of such a zone on the basis of arrangements freely arrived at among the States of the region concerned;

24. The status of a nuclear weapon free zone should be respected by all States parties to the treaty establishing the zone as well as by States outside the region, including all States whose cooperation and support are essential for the maximum effectiveness of such a zone, namely, the nuclear weapon states and, if there are any, States with territory or that are internationally responsible for territories situated within the zone concerned.

25. The nuclear weapon states should be consulted during the negotiations of each treaty and its relevant protocol(s) establishing a nuclear weapon free zone in order to facilitate their signature to and ratification of the relevant protocol(s) to the treaty, through which they undertake legally binding commitments to the status of the zone and not to use or threaten to use nuclear weapons against States parties to the treaty.

26. If there are any States with territory or that are internationally responsible for territories within the zone concerned, these States should be consulted during the negotiations of each treaty and its relevant protocols establishing a nuclear weapon free zone with a view to facilitating their signature and ratification of the relevant protocol(s) to the treaty.

27. The process of establishing the zone should take into account all the relevant characteristics of the region concerned.

28. The establishment of further nuclear weapon free zones reaffirms the commitment of the States that belong to such zones to honour their legal obligations deriving from other international instruments in force in the area of nuclear non-proliferation and disarmament to which they are parties.

29. The obligations of all the States parties to a treaty establishing a nuclear weapon free zone should be clearly defined and be legally binding, and the States parties should fully abide by such agreements.

30. The arrangements relating to a nuclear weapon free zone should be in conformity with the principles and rules of international law, including the United Nations Convention on the Law of the Sea.⁵

31. States parties to a nuclear weapon free zone exercising their sovereign rights and without prejudice to the purposes and objectives of such a zone remain free to decide for themselves whether to allow visits by foreign ships and aircraft to their ports and airfields, transit of their airspace by foreign aircraft and navigation by foreign ships in or over their territorial sea, archipelagic waters or straits that are used for international navigation, while fully honouring the rights of innocent passage, archipelagic sea lane passage or transit passage in straits that are used for international navigation.

32. A treaty establishing a nuclear weapon free zone based on arrangements freely arrived at among the States of the region concerned, and fully taking into account any other obligations that such States

may have under existing regional and international arrangements, if applicable, should be implemented by the States parties concerned in accordance with their individual constitutional requirements and should be consistent with international law and the rights and obligations recognised in the Charter of the United Nations. States parties to the current nuclear weapon free zones should ensure that their adherence to other international and regional agreements does not entail any obligations contrary to their obligations under the nuclear weapon free zone treaties.

33. A nuclear weapon free zone should provide for the effective prohibition of the development, manufacturing, control, possession, testing, stationing or transporting by the States parties to the treaty of any type of nuclear explosive device for any purpose, and should stipulate that States parties to the treaty do not permit the stationing of any nuclear explosive devices by any other State within the zone.

34. A nuclear weapon free zone should provide for the effective verification of compliance with the commitments made by the parties to the treaty, *inter alia*, through the application of full-scope IAEA safeguards to all nuclear activities in the zone.⁶

35. A nuclear weapon free zone should constitute a geographical entity whose boundaries are to be clearly defined by prospective States parties to the nuclear weapon free zone treaty through full consultations with other States concerned, especially in cases where territories in dispute are involved, with a view to facilitating agreement of those States concerned.

36. Nuclear weapon States should, for their part, assume in full their obligations vis-a-vis nuclear weapon free zones upon signing and ratifying relevant protocols, including strict compliance with the statute of the nuclear weapon free zone and, through the signing of relevant protocols, enter into binding legal commitments not to use or threaten to use nuclear weapons against the States that belong to the nuclear weapon free zone.

37. A nuclear weapon free zone should not prevent the use of nuclear science and technology for peaceful purposes and could also promote, if provided for in the treaties establishing such zones, bilateral, regional and international cooperation for the peaceful use of nuclear energy in the zone, in support of socio-economic, scientific and technological development of the States parties.

The Way Ahead

38. The number of initiatives taken to establish new nuclear weapon free zones is clear evidence of the importance of such zones to current international efforts to promote disarmament, arms control and non-proliferation.

39. All existing nuclear weapon free zones should come into force as soon as possible. States that are still in the process of considering their signature and/or ratification of the treaties and relevant protocols establishing the existing nuclear weapon free zones are encouraged to proceed therewith. In this context, cooperation and efforts by all States concerned are essential.

40. The establishment of nuclear weapon free zones in regions for which consensus resolutions of the General Assembly exist, such as the Middle East and Central Asia, as well as the development of zones free from all weapons of mass destruction, should be encouraged.⁷

41. Vigorous efforts should be made to secure cooperation and coordination among the States parties and signatories to nuclear weapon free zone treaties in order to promote their common objectives. Members of nuclear weapon free zones could also work together to share experiences with States of other regions and support their efforts to establish further nuclear weapon free zones.

42. Any State from a region concerned has the right to propose the establishment of a nuclear weapon free zone in its region.

43. Any proposal on the establishment of a nuclear weapon free zone on the basis of arrangements freely arrived at should only be considered after consensus on the objective has been achieved in broad consultations within the region concerned.

44. Without prejudice to the provisions of the United Nations Convention on the Law of the Sea, including the principle of the freedom of the high seas and to other applicable treaties, political relations and cooperation among the States parties and signatories to nuclear weapon free zone treaties can be expanded and consolidated in the context of the ultimate goal of elimination of all nuclear weapons, particularly in the Southern Hemisphere and adjacent areas.

45. The international community should continue to promote the creation of nuclear weapon free zones around the globe in an effort towards achieving the ultimate goal of freeing the entire world from all nuclear weapons as well as other weapons of mass destruction,

and, more broadly speaking, of general and complete disarmament under strict and effective international control, so that future generations can live in a more stable and peaceful atmosphere.

REFERENCES

1. General Assembly resolution S-10/2.
2. These treaties may be described as follows:
 - (i) Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean (Treaty of Tlatelolco) was opened for signature on 14 February 1967, thereby establishing for the first time in history a nuclear weapon free zone; the Treaty has served as a model for the promotion of other similar zones (United Nations, *Treaty Series*, vol. 634, No. 9068);
 - (ii) The South Pacific Nuclear Free Zone Treaty (Treaty of Rarotonga) was opened for signature by the States of the South Pacific Forum on 6 August 1985 (*The United Nations Disarmament Yearbook*, vol. 10: 1985 (United Nations publication, Sales No. E.86.IX.7), appendix VII);
 - (iii) The Treaty on the South-East Asia Nuclear weapon free Zone (Treaty of Bangkok) was opened for signature on 15 December 1995 as part of the establishment of a zone of peace, freedom and neutrality in South-East Asia;
 - (iv) The African Nuclear Weapon free Zone Treaty (Treaty of Pelindaba) was opened for signature on 11 April 1996 (A/50/426, annex).
3. United Nations, *Treaty Series*, vol. 729, No. 10485.
4. *1995 Review and Extension Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, Final Document, Part I* (NPT/ CONF.1995/ 32 (Part I), annex, decision 2).
5. *Official Records of the Third United Nations Conference on the Law of the Sea*, vol. XVII (United Nations publication, Sales No. E.84.V.3), document A/ CONF.62/122.
6. Based on IAEA document INFC1RC/153, as strengthened by document INFCIRC/540.
7. Owing to its unique geographical circumstances, Mongolia has declared its nuclear weapon free status in order to promote its security. This status was welcomed by the General Assembly in its consensus resolution 53/77 D of 4 December 1996.

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THE TREATY OF RAROTONGA

The Treaty of Rarotonga was signed, not coincidentally, on the fortieth anniversary of Hiroshima Day—6 August 1985. I was present at the simple ceremony, which took place in a conference hall in Rarotonga, in the Cook Islands. There was a sense of history there. The hall windows looked out on the blue reaches of ocean which had witnessed the two occasions on which nuclear weapons had been used in earnest and which had, in subsequent years, been so abused by the testing of new and more powerful devices. Eight South Pacific leaders filed up and signed the Treaty document. It went into effect a little over a year later, with eight countries as parties.

The adoption of the Treaty of Rarotonga (or South Pacific Nuclear Free Zone Treaty, as it is formally titled) and the establishment of the zone have been warmly welcomed in the United Nations General Assembly, in review conferences and in regional meetings around the world. The South Pacific nuclear free zone is a reality, a permanent feature of the world map. The Treaty of Rarotonga has been a success. It is timely to look at the Treaty, in particular at some of the ups and downs of its progress over the past two years. But, let us first look back somewhat further, to its genesis, and then examine what the Treaty does, and why.

In the decade of the 1960s, the Labour Parties of New Zealand and Australia, both then in opposition, adopted resolutions at their respective Party conferences calling for the creation of a regional nuclear free zone. There were precedents at hand. In 1959 a demilitarised zone had been established in the great empty continent to the south, Antarctica. In 1967, a nuclear weapon free zone had been set up in Latin America, to the east.

But the great inspiration for the zone came from the strongly held views of many people in both countries who opposed the

commencement, in the mid-1960s, of an atmospheric nuclear testing programme by France at Mururoa Atoll in the Tuamoto Archipelago in French Polynesia. Those tests and the environmental and security concerns to which they gave rise stimulated anti-nuclear sentiments first engendered by the British and American testing programmes conducted across the South Pacific—from the deserts of Australia to Christmas and Johnston islands and the atolls of Bikini and Rongelap.

The New Zealand Labour Government sought, as a first step towards its objective of creating a South Pacific nuclear free zone, the concurrence of the South Pacific Forum. The Forum is a regional institution, established in the early 1970s, which usually meets annually at head-of-government level. It comprises all the independent and self-governing countries in the South Pacific. In July 1975, the South Pacific Forum agreed to New Zealand's proposal to include in its communique a paragraph commending "the idea of establishing a nuclear weapon free zone in the South Pacific" as a means of achieving the "aim of keeping the region free from the risk of nuclear contamination and of involvement in a nuclear conflict". It agreed to seek wider endorsement of the idea through the adoption of a resolution by the United Nations General Assembly and to undertake a study of the ways and means of establishing a zone.

Fiji, New Zealand and Papua New Guinea duly introduced a draft resolution in the First Committee of the General Assembly in 1975. Chile, Ecuador, Malaysia, Peru, the Philippines and Singapore signed on as additional co-sponsors.

On 11 December, the General Assembly adopted resolution 3477 (XXX) by 110 votes to none, with 20 abstentions, the latter including the Warsaw Treaty countries, several NATO members, and Egypt. The resolution endorsed the "idea of the establishment" of a zone, invited the countries concerned "to carry forward consultations about ways and means of realising this objective", and expressed the hope "that all States, in particular the nuclear weapon states, will co-operate fully in achieving the objectives" of the resolution.

By the time of the next South Pacific Forum Meeting in 1976, a new Government had been voted into office in New Zealand which no longer regarded the establishment of a nuclear weapon free zone in the area as an early priority. At that meeting Forum countries were only able to agree that further consultations were necessary. It was not until 1983 that the final impetus came to conclude a treaty. The major push was made by a newly-elected Government in Australia, with the

support of most of its Forum partners. By August 1984, the proposal had matured sufficiently for the Forum to agree to establish a working group of officials to examine the issues and prepare a draft treaty in time for its 1985 meeting.

The Treaty, the Forum directed, was to be drafted in accordance with certain principles. It was to reflect Forum members' aspirations to enjoy peaceful development, free from the threat of environmental pollution; their acknowledgement of existing relevant treaties; their willingness to undertake commitments not to acquire or test nuclear explosives; and their wish that nobody should test, use or station such explosives in the South Pacific. The Treaty was also to reflect the "particular importance of the principle of freedom of navigation and overflight and the treaty obligations of Forum members".

But what was to be done about the most significant issue dividing Forum Governments in the area of security policy? The new New Zealand Labour Government, elected in July 1984, had, in common with some other Forum members, halted access to its territory by foreign military vessels and aircraft unless satisfied that they were not carrying nuclear weapons. Most other Forum members had not applied such a policy, and Australia in particular was concerned to continue to allow port access by such vessels and aircraft without requiring prior disclosure as to the nature of their weaponry. In a carefully negotiated compromise, the Forum directed that each member was to retain "unqualified sovereign rights" to make its own security arrangements, including the question of access to its ports and airfields by vessels and aircraft of other countries.

In addition, the Working Group was directed to consider issues relevant to a possible complete prohibition on the dumping of radioactive waste at sea. Between November 1984 and June 1985 a draft text was prepared at meetings of the Working Group held in Suva, Fiji. A draft treaty and three draft protocols were submitted, by unanimous decision of the Working Group, to the Forum at its 1985 meeting in Rarotonga. At that meeting, the Forum adopted the Treaty by consensus and opened it for signature. Eight Forum members—Australia, Cook Islands, Fiji, Kiribati, New Zealand, Niue, Tuvalu and Samoa—signed the Treaty at Rarotonga.

The Forum deferred a decision concerning adoption of the three draft protocols until its 1986 meeting. It considered that consultations first ought to be held with the States that would be eligible to become parties to them. Accordingly, in January and February 1986, a

representative team of officials visited the capitals of the five nuclear weapon states. Its report was considered by the Working Group at a meeting in April and the draft protocols were resubmitted to the Forum at its seventeenth meeting, in Suva in August 1986. They were adopted and opened for signature as from 1 December that year.

As at 1 November 1987, the Treaty of Rarotonga had been ratified by nine members of the Forum: Australia, Cook Islands, Fiji, Kiribati, Nauru, New Zealand, Niue, Tuvalu, and Samoa. Two other Forum members, Papua New Guinea and Solomon Islands, have signed, but not yet ratified, the Treaty.

At the time of the Treaty's adoption, the Forum had 13 members. Of those, Vanuatu and Tonga have not yet signed the Treaty, though both joined in the consensus decision to adopt it. Vanuatu believes that the Treaty is insufficiently comprehensive, since, for example, it does not completely prohibit visits to Treaty parties by warships and aircraft which may be nuclear armed. Nor does it prohibit the export of uranium. Tonga has expressed misgivings about the possible impact of the Treaty on security relationships within the region.

The two new members which joined the Forum in May 1987 in Samoa—the Federated States of Micronesia and the Marshall Islands—are eligible under the Treaty to become parties to it. The only criterion established by the Treaty is that parties must be members of the South Pacific Forum. The two new members, however, have obligations arising from their Compacts of Association with the United States. These confer on the United States certain rights and responsibilities in security and defense matters that would have a direct bearing on the ability of the two island groups to undertake the commitments in the Treaty. Whether they can in due course become parties to the Treaty will be determined in accordance with those obligations.

The South Pacific nuclear free zone stretches from the west coast of Australia in the west to the western boundary of the Latin American zone in the east. It spans approximately 130 degrees of longitude, from 115° E to 115° W. It extends from the equator (with small intrusions into the northern hemisphere to incorporate the exclusive economic zones of Papua New Guinea, Kiribati and Nauru) to 60° S, the boundary of the area of application of the Antarctic Treaty. The zone encloses within its boundaries sovereign territory and areas of the high seas. Provision is made to extend the zone should new members of the South Pacific Forum become parties to the Treaty.

In general, the Treaty and its Protocols apply to “territory” within the zone, defined in article 1 as “internal waters, territorial sea and archipelagic waters, the seabed and subsoil beneath, the land territory and the airspace above them”. But, some obligations apply outside such “territory”, for example, the obligation of Treaty parties not to possess nuclear explosive devices applies globally, and the obligation in Protocol 3 not to test such devices applies throughout the zone.

Before examining the provisions of the Treaty, one notable aspect of its scope must be highlighted. An issue which has bedevilled other nuclear free zone proposals, including the Treaty of Tlatelolco, is whether the prohibitions must apply only to nuclear weapons. Should parties to a zonal treaty be free to develop, possess and use a nuclear explosive for peaceful applications, albeit with some constraints? While the Treaty of Tlatelolco provides that parties “may carry out explosions of nuclear devices for peaceful purposes—including explosions which involve devices similar to those used in nuclear weapons” (article 18), a complex legal argument has ensued over the real latitude allowed by the Treaty when read as a whole.

The manufacture of a simple nuclear explosive device for civilian purposes requires access to the same techniques and material as the manufacture of a device for military purposes. Possession of a device by a State which claims only peaceful designs may thus cause the same apprehensions among its neighbours as if it had acknowledged its military application, with a consequential impulse towards nuclear proliferation throughout the region concerned. Nevertheless, some States insist that the distinction can be maintained and have refused to surrender the right to manufacture or acquire allegedly peaceful devices. The Treaty of Rarotonga simply resolves the question by applying, in comprehensive fashion, to all nuclear explosive devices.

The Treaty’s major provisions include the following obligations of each party:

- Not to “manufacture or otherwise acquire, possess or have control over any nuclear explosive device”, and “not to take any action to assist or encourage the manufacture or acquisition of any nuclear explosive device by any State” (article 3);
- Not to provide “source or special fissionable material, or equipment or material especially designed or prepared for the processing, use or production of special fissionable material for peaceful purposes” to nuclear weapon or non-nuclear weapon states unless adequately safeguarded (article 4);

- “To prevent in its territory the stationing of any nuclear explosive device” (article 5); however, each party is free to allow visits by foreign ships and aircraft, airspace transit and certain maritime transit rights not guaranteed under the law of the sea (article 5, subparagraph 2);
- “To prevent in its territory the testing of any nuclear explosive device”, and “not to take any action to assist or encourage the testing of any nuclear explosive device by any State” (article 6);
- Not to dump “radioactive wastes and other radioactive matter” at sea in the zone, to prevent such dumping by anyone in its territorial sea, and not to encourage or assist such dumping by anyone at sea in the zone (article 7).

Most of these obligations may be described as characteristic of nuclear free zone treaties and proposals. In particular, the obligations not to manufacture, acquire, possess, or test nuclear explosive devices, nor to facilitate others in doing so, nor to allow them to be stationed in national territory are relatively standard. All of these, except the latter, find their counterparts at the global level in the 1968 Treaty on the Non-Proliferation of Nuclear Weapons, article VII of which recognises “the right of any group of States to conclude regional treaties in order to assure the total absence of nuclear weapons in their respective territories”

But, the Forum members did graft their own somewhat more comprehensive approach onto these standard provisions. I have already mentioned the decision to apply the Treaty to all nuclear explosive devices. By way of another example, the Treaty’s prohibition on transportation within national territory (other than in maritime areas) specifically includes the “inland waters” of parties. The use of the latter phrase, which is not in common usage in international law, ensures that a hypothetical deployment system sited on, or in, lakes, rivers and canals will be prevented by the prohibition.

In another important respect, Forum members made an advance on the standard nuclear free zone formula. Although the Antarctic Treaty prohibits the disposal of radioactive waste in that Treaty’s area of application, the area south of 60° S, including land and maritime areas, that kind of provision has generally been seen to be more appropriately embodied in an environmental convention than in a treaty dealing with nuclear disarmament. The Treaty of Tlatelolco has no

equivalent provision. However, because to South Pacific minds the preservation of their environment was as much an issue of security as issues of nuclear weaponry, the prohibition in article 7 on the dumping of radioactive waste at sea fitted naturally into the Treaty of Rarotonga's general framework. The decision to include the article reflected the Forum's concern that the region should not be used as a dump for the world's radioactive wastes. The Pacific Ocean has already had consigned to it vast quantities of this material. Forum members wanted the South Pacific to become off-limits to radioactive waste dumping by all nations. They determined to set an example. Henceforth the radioactive waste generated by several Forum members in medical, industrial and research activities will have to be disposed of on land or exported from the region for disposal elsewhere.

They also committed themselves to the then ongoing negotiations among all members of the South Pacific Commission (a regional organisation composed of Forum members, as well as France, the United Kingdom and the United States on account of their administration of territories within the South Pacific) for a convention containing a generally accepted prohibition on dumping throughout much of the region. Those negotiations eventually led to the adoption in November 1986 of the Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (and its associated Protocols). Its article 10 contains a general prohibition on the dumping of radioactive wastes in the area governed by the Convention. That area overlaps to quite a substantial extent with that of the zone.

Compliance by parties with their obligations under the Treaty of Rarotonga is subject to a comprehensive system of verification. That is in accordance with an important principle contained in the 1975 report of the United Nations *ad hoc* experts' group on nuclear weapon free zones, notably that nuclear free zone arrangements had to "contain an effective system of verification to ensure full compliance with the agreed obligations". Unlike the Treaty of Tlatelolco, the Treaty of Rarotonga does not establish a permanent secretariat responsible for verification activities and administrative functions. Instead, necessary administrative tasks, including the important depositary functions, are entrusted to the Director of the South Pacific Bureau for Economic Cooperation, the organisation based in Suva, Fiji, which serves as secretariat to the South Pacific Forum. The Director also has administrative responsibilities under the control system established by the Treaty to verify compliance. That system includes:

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- Reports by a party of any significant event within its jurisdiction affecting the implementation of the Treaty, and exchanges of information on matters arising under or in relation to it;
 - Consultations among parties through the mechanism of a consultative committee, to be convened by the Director from time to time, to consider any matter arising under the Treaty or to review its operation;
 - The compulsory application of IAEA safeguards to peaceful nuclear activities;
 - A complaints procedure.

The complaints procedure provides for any complaint to be considered by the representative Consultative Committee and special inspections (if warranted), with liberal access to the territory of the party about whom the complaint has been made. A decision by the Consultative Committee to uphold the complaint will require the parties to meet promptly at a meeting of the South Pacific Forum, as will a request by either of the two parties concerned, or in the event of non-compliance with the complaints procedures. There is thus no automatic sanction that takes effect in the event of a proven breach of the Treaty; rather, the matter is removed to the political arena at the region's highest political level.

It is true that no Forum member has indicated a desire either to acquire a nuclear explosive device or to provide storage or stationing facilities in its sovereign territory. Indeed, few Forum members have the technical capacity to develop such devices, and it is difficult to envisage a scenario in which any of the nuclear weapon states would see strategic advantage in seeking to obtain the agreement of any Forum member to storage or stationing rights. However, the Treaty is an expression in legal form of regional sentiment in opposition to the presence of nuclear weaponry in the South Pacific, and as such its value is considerable. The essential value and purpose of the Treaty was described by the Prime Minister of New Zealand, the Right Honourable David Lange, on 9 December 1986:

“We are fortunate in the South Pacific that the balance of security does not involve the stationing of nuclear weapons on national territory within the region. The South Pacific Nuclear Free Zone gives concrete expression to our region's determination that the existing balance should not be upset by the introduction of nuclear weapons.”

He was speaking shortly after hearing that Australia was about to deposit its instrument of ratification, thereby, bringing the Treaty into

force. That only 17 months had elapsed between the adoption of the Treaty and its entry into force adequately testifies to the broad and enthusiastic support given to the Treaty within the region.

But, while regional support is essential to the Treaty's success, the understanding and support of the nuclear weapon states, as well as of the broader international community, is a most desirable ingredient in the mix as well. In the latter respect, the Treaty has earned considerable attention. Apart from expressions of endorsement from individual countries around the Pacific basin and elsewhere, the Treaty has received favourable mention in the communique's of international gatherings. The adoption of the Treaty was welcomed, for example, by all States parties participating in the Third Review Conference of the non-proliferation Treaty, in September 1985.

But the success in securing the support of the nuclear weapon states—China, France, the Soviet Union, the United Kingdom and the United States—has been more mixed. It was through the adoption of the three Protocols to the Treaty that the Forum sought to obtain their specific endorsement.

Protocol 1 has similar effect to Tlatelolco's Additional Protocol I. It is open for signature by France, the United Kingdom and the United States, the only three States "internationally responsible" for territories within the zone—Pitcairn Island (United Kingdom), American Samoa and Jarvis Island (United States), and New Caledonia, Wallis and Futuna islands and French Polynesia (France). Upon ratification, a party to Protocol 1 would apply to its territories the Treaty's prohibitions on the manufacture, stationing and testing of nuclear explosive devices, as well as the requirement to safeguard any peaceful nuclear activities.

Protocols 2 and 3 are open for signature by all five nuclear weapon states. Protocol 2 has similar effect to Additional Protocol II of the Treaty of Tlatelolco. Upon becoming party to the Protocol, a nuclear weapon State would undertake not to use or threaten to use a nuclear explosive device against parties to the Treaty or territories within the zone for which a State that is a party to Protocol 1 is internationally responsible. The five nuclear weapon states have already made general declarations or "negative security guarantees" along these lines to non-nuclear weapon states. Only China's guarantee, however, is unconditional. The undertaking in Protocol 2 puts such guarantees into a legally binding form, free from any conditions (although parties to the Protocols are not precluded from entering reservations, unlike parties to the Treaty itself). Parties also undertake not to contribute to any act by a party violating either the Treaty or a Protocol.

Protocol 3 has no direct equivalent in the Additional Protocols to the Treaty of Tlatelolco. Nuclear Weapon States which become parties to it will undertake not to test any nuclear explosive device anywhere within the zone, not just within the territories subject to Protocol 1. Protocol 3 represents the one initiative by the Forum in the SPNFZ regime directly aimed at securing acceptance by the nuclear weapon states of restraints on their activity on the high seas. In practical terms, the Protocol requires a substantially new undertaking only by France and China, as the other three nuclear weapon states are parties to the 1963 partial test-ban Treaty, which already bans testing under or over water, including territorial waters or high seas. But the decision to adopt this separate Protocol reflected the strong feeling of the Forum that the nuclear free regime it had established should preclude testing throughout the zone.

The consultations on the draft protocols undertaken with the five nuclear weapon states resulted in some significant changes in the texts that were finally adopted, notably the inclusion of withdrawal clauses in each Protocol. Despite that gesture of good will by the Forum, the United States, the United Kingdom and France have declined to sign any of them. So far, only the Soviet Union and China have accepted the invitation to be associated with the Treaty of Rarotonga; each has signed Protocols 2 and 3.

China's signature in February 1987 was particularly welcome, since it was not accompanied by a lengthy interpretative statement of the kind made by the USSR when it signed Protocols 2 and 3 in December 1986. That statement is, for the most part, a repetition of the standard Soviet conditions on the applicability of its negative security assurance. A not dissimilar statement was made by it in the context of its obligations under the Treaty of Tlatelolco. In one respect at least the statement is a little confused, since it says that, in the Soviet view, visits to ports and airfields by foreign military ships and aircraft carrying nuclear weapons would (despite a clear statement to the contrary in article 5, subparagraph 2), be in conflict with the aims of the Treaty and incompatible with the nuclear free status of the zone". At its 1987 meeting, the Forum expressed disappointment at the Soviet statement and called upon it not to enter any reservations or statement of interpretation when it ratifies the Protocols.

France has long persisted in viewing the Forum's initiative as being directed solely against it. That is untrue. It is nevertheless comprehensible, given the fact that France alone conducts activities in the zone in

contravention of the Treaty. But, Forum members are on record as opposing all nuclear testing by all countries in all environments. If they appear on occasion to focus particularly on testing carried out by France in their own region, that will surely be equally understandable.

For nearly a decade, from the mid-1960s to the mid-1970s, South Pacific countries watched with mounting protest and concern as France conducted atmospheric tests, long after three of the other four nuclear weapon states had taken their testing underground.

Why did nuclear testing—why does nuclear testing—so raise the concerns of the Pacific peoples? For us, the nuclear experience is not just a distant abstraction. I can vouch for that from my own observation. I remember a soft tropical night in Western Samoa in the early 1960s. At around 9 p.m. the dark sky was gradually suffused with a deep red glow to the north which spread over the whole of the heavens. Although many were aware that it was an American nuclear test, conducted many hundreds of miles away, we were still shaken by it. Those villagers who did not know what it was were convinced it was the end of the world. Bible readers all, some felt the wrath of God was about to descend. It is small wonder that there is a deep resistance throughout the region to things nuclear.

The culmination of the protests came in 1973. New Zealand sent a Navy frigate to Mururoa to protest, by its presence, the testing programme. Shortly afterwards, the International Court of Justice, at the suit of New Zealand and Australia, granted an interim injunction. In 1974, France announced it was moving its testing operations underground. The chorus of objection from South Pacific countries has not diminished. At its 1987 meeting, the Forum, in its communique, “expressed its profound concern that France continued to test nuclear devices in the South Pacific, and called for this to cease”. France has not done so.

The reaction of the United States and the United Kingdom to the invitation to sign the Protocols was less predictable. Their ultimate rejection of the Treaty was therefore doubly disappointing. Each has had a long historical and cultural association with nearly all South Pacific countries. Many, indeed, were originally British colonies, and all have had close associations with the United States in recent years. Understanding and support are expected from those two Powers in a measure greater than from others. It might be assumed that Forum members had given full and careful consideration to the security concerns of these two countries during the preparation of the treaty and protocols.

The United States announced in early February 1987, however, that it was not “under current circumstances” in a position to sign the Protocols. That decision was made “in view of the United States’ global security interests and responsibilities”. No further formal statement was made. It is, on the face of it, a baffling and apparently contradictory decision, since the United States has ratified both Additional Protocols to the Treaty of Tlatelolco. There is no evident, single feature of the Treaty of Rarotonga which might cause the United States reluctance, since, for example, it does not purport to interfere with navigational freedoms, seek to prohibit port access, or disrupt existing security arrangements. The United States has, furthermore, already recognised that the “establishment of nuclear weapon free zones on the basis of arrangements freely arrived at among the States of the region concerned constitutes an important disarmament measure” — it did so when it participated in the adoption by consensus of the Final Document of the first special session on disarmament, in 1978. It is from this consensus document, paragraph 60, that the passage quoted is taken.

Whatever the reason, the decision was deeply disappointing to Forum countries. Perhaps the most outspoken critic was the then Prime Minister of Fiji, Ratu Sir Kamisese Maru, who noted:

“While the United States had highlighted its global security interests, it appeared to have totally disregarded its professed interest in enhancing bilateral and regional relations.”

After the United States announcement, the British decision was probably inevitable, although, given the long and extremely close history of the British connection with the South Pacific, an even greater disappointment. The United Kingdom’s only explanation was that “it would not serve [its] national interest to become party to the Protocols to the Treaty”, although it was not acting inconsistently with the Protocols, nor had it any intention to do so. Noting that the United Kingdom had been the first both to sign and ratify the two Additional Protocols to the Treaty of Tlatelolco, the New Zealand Prime Minister, Lange, responded:

“Adherence to the Protocols is but a small step from the adoption of that position [not to act inconsistently with the Protocols], yet to the South Pacific countries adherence would be a gesture of great symbolic and substantive importance. It is widely recognised that the historical and present circumstances of the South Pacific region have rendered it deeply sensitive to such issues as the proliferation of nuclear weapons, nuclear testing and the dumping of radioactive waste at sea.”

The decision by the three Western nuclear powers is a setback to the Treaty of Rarotonga, but Forum members will not be too disheartened. They will note that the Additional Protocols to the Treaty of Tlatelolco have not yet been fully ratified—20 years after they were adopted (France has signed but not ratified Additional Protocol I) and that it took several years before many of the eligible countries finally became parties to them. They will have to set themselves for a long haul to persuade the United States, France and the United Kingdom that the “current circumstances” that tipped their decision against the Protocols no longer apply.

In the interim the treaty is in force. It represents a significant security initiative by the people of the region for a stable South Pacific that will remain nuclear free in perpetuity.

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THE 20TH ANNIVERSARY OF THE TREATY OF TLATELOLCO

It seems advisable to emphasise from the outset that the nuclear weapon free zone in Latin America has the privilege of being the first such zone to be established in densely inhabited territories. The only other zone that also covers inhabited territories in the South Pacific nuclear free zone, created by the Treaty of Rarotonga, which entered into force on 11 December, 1986.

The official of the Treaty which established the Latin American zone and defined its statute is the "Treaty for the Prohibition of Nuclear Weapons in Latin America", but it is usually referred to as the "Treaty of Tlatelolco", employing the Aztec name for the district of the Mexican capital where the Ministry of Foreign Affairs of Mexico is located and where the Treaty itself was opened for signature 20 years ago, on 14 February 1967.

The modest purpose of this article on the Treaty is to provide a synoptic view of both its genesis and the most salient features which the analysis of its provisions may reveal.

Genesis of the Treaty of Tlatelolco

The first international document directly related to the genesis of the Treaty of Tlatelolco was the Joint Declaration of 29 April 1963. By this Declaration, the presidents of Bolivia, Brazil, Chile, Ecuador and Mexico announced that their Governments were willing to sign a Latin American multilateral agreement by which they would undertake not "to manufacture, receive, store or test nuclear weapons or nuclear launching devices."

Seven months later, the United Nations General Assembly, taking as a basis a draft resolution submitted by 11 Latin American countries (the five previously mentioned, plus Costa Rica, El Salvador, Haiti,

Honduras, Panama, and Uruguay), adopted on 27 November 1963 resolution 1911 (XVIII). In this resolution, the General Assembly, *inter alia*, welcomed the initiative of the five presidents for the military denuclearisation of Latin America; expressed the hope that the States of the region would initiate studies “concerning the measures that should be agreed upon with a view to achieving the aims” of the Joint Declaration; and requested the Secretary-General to extend to the States of Latin America, at their request, “such technical facilities as they may require in order to achieve the aims set forth in the present resolution.”

Almost one year elapsed between the adoption of the resolution and the next step worth mentioning in a review of the antecedents of the Treaty. This interval was not wasted, however. The Mexican Government put it to good use with active diplomatic consultations which resulted in the convening of a Latin American conference known as the “Preliminary Session on the Denuclearisation of Latin America” (or REUPRAL, its Spanish acronym). Meeting in Mexico City from 23 to 27 November-1964, REUPRAL adopted a measure which was later to prove decisive for the success of the Latin American enterprise—the creation of an *ad hoc* organ, the Preparatory Commission for the Denuclearisation of Latin America (known also by its Spanish acronym, COPREDAL). The Preparatory Commission was specifically instructed (in the same resolution whereby it was established) “to prepare a preliminary draft of a multilateral treaty for the denuclearisation of Latin America, and to this end, to conduct any prior studies and take any prior steps that it deems necessary”.

COPREDAL held its first session in Mexico City from 15 to 22 March 1965, at which it adopted its rules of procedure and set up four subsidiary organs: a co-ordinating committee and three working groups. Subsequently the Commission would create another subsidiary organ, a negotiating committee.

The Preparatory Commission held a total of four sessions, the last of which took place just under two years after its creation, from 31 January to 14 February 1967. Contrary to what has generally happened with other disarmament treaties and conventions, the draft treaty’s articles dealing with verification, inspection and control were the first to be completed—at the second session of the Commission, from 23 August to 2 September 1965. At that time a full declaration of principles was also drafted to serve as a basis for the preamble of the draft treaty.

During its third session, COPREDAL received from its Co-ordinating Committee a working paper which contained the complete text of a preliminary draft for the Treaty that the Commission had received the mandate to prepare. This draft, together with other proposals submitted by member States, provided the basis for the deliberations of the session. The result was the unanimous approval of a document entitled "Proposals for the preparation of the Treaty for the Denuclearisation of Latin America", which played as prominent a role in the history of the Treaty as that of the Dumbarton Oaks proposals in the history of the United Nations. These proposals included all provisions which might prove necessary for the Treaty as a whole, although in some cases COPREDAL, not having been able to find solutions satisfactory to all, had been obliged to present to the Governments two parallel alternatives.

Of those few pending questions which the Commission would be called upon to solve as its fourth session, the most important one was the entry into force of the Treaty. This issue probably provoked the greatest discussion in COPREDAL's proceedings. Because of this problem and the positive precedent established by COPREDAL's solution to it, I feel that it is worth examining the proceedings in somewhat greater detail.

When the Preparatory Commission considered this subject in April 1966, two distinct views became apparent. According to the first view, the Treaty should come into force, between States which would ratify it, on the date of deposit of their respective instruments of ratification, in keeping with standard practice. The representative Latin American body to be established by the Treaty should begin to function as soon as 11 instruments of ratification were deposited, as this number constituted a majority of the 21 members of the Preparatory Commission. Those States supporting the alternative view argued that the Treaty, although signed and ratified by all member States of the Preparatory Commission, should enter into force only upon completion of four requirements, essentially those defined in article 28 of the Treaty. These requirements may be summarised as follows: the signature and ratification of the Treaty of Tlatelolco and of its Additional Protocols I and II by all States to which they were open, and the conclusion of bilateral or multilateral agreements concerning the application of the safeguards system of the International Atomic Energy Agency (IAEA) by each party to the Treaty.

As a result of these differing views, COPREDAL was obliged to present, in its proposals, two parallel texts. These texts stated respectively the provisions that the Treaty would contain, according to whether one accepted the first or second thesis. To solve the problem, the Coordinating Committee, in its report of 28 December 1966, suggested the adoption of a conciliatory formula, which could receive the approval of all member States of the Commission without detriment to their respective positions on the alternative texts. It was this formula, with some modifications, which was finally adopted and incorporated into article 28. In keeping with it, the Treaty would go into effect for all States that had ratified it upon completion of the four requirements specified in paragraph 1 of article 28. That notwithstanding, the second paragraph of the article states:

“All signatory States shall have the imprescriptible right to waive, wholly or in part, the requirements laid down in the preceding paragraph. They may do so by means of a declaration which shall be annexed to their respective instrument of ratification and which may be formulated at the time of deposit of the instrument or subsequently. For those States which exercise this right, this Treaty shall enter into force upon deposit of the declaration, or as soon as those requirements have been met which have not been expressly waived.

” Moreover, the third paragraph of the same article stipulates:

“As soon as this Treaty has entered into force in accordance with the provisions of paragraph 2 for eleven States, the Depositary Government shall convene a preliminary meeting of those States in order that the Agency may be set up and commence its work.”

As one can see, an eclectic system was adopted, which, while respecting the viewpoints of all signatory States, prevented none the less any particular State from precluding the enactment of the Treaty for those which would voluntarily wish to accept the statute of military denuclearisation defined therein.

The Treaty of Tlatelolco has thus contributed effectively to dispelling the myth that an essential requirement for establishing a nuclear weapon free zone is that all States of the region concerned become, from the very outset, parties to the treaty establishing the zone. The system adopted in the Latin American instrument proves that, although no State can obligate another to join such a zone, neither can any State prevent others wishing to do so from adhering to a regime for the total absence of nuclear weapons within their own territories.

Once the question of the entry into force of the Treaty had been settled at the fourth session of COPREDAL, the Preparatory Commission proceeded to settle, without major difficulties, the few other pending problems. On 12 February 1967, the Treaty for the Prohibition of Nuclear Weapons in Latin America was unanimously approved, and two days later, at the closing ceremony of the Commission's proceedings, it was opened for signature and subscribed to by the representatives of 14 of its 21 members. As of today, 20 years later, the number of signatory States stands at 26, of which 23 are already parties to the Treaty.

Additional Protocol I, which is open to the four States—United Kingdom, Netherlands, United States and France—which are internationally responsible for territories lying within the limits of the geographical zone established by the Treaty, has been signed and ratified by the first three of those States. France has also signed the Protocol, but it has not yet ratified it.

The five nuclear weapon states—United Kingdom, United States, France, China and Soviet Union—are already parties to Additional Protocol II.

As provided for in paragraph 3 of article 28 previously quoted, as soon as the Treaty entered into force for 11 States, the depositary Government convened a "preliminary meeting" of those States in order to set up the Agency for the Prohibition of Nuclear Weapons in Latin America (known by its Spanish acronym OPANAL). This preliminary meeting (REOPANAL) took place in late June 1969 and carried out successfully all the preparatory work necessary for the first session of the General Conference of OPANAL. The latter was inaugurated on 2 September 1969 in the presence of U Thant, then Secretary-General of the United Nations, and Sigvard Eklund, the Director General of IAEA. After seven working days, the General Conference gave its approval to a series of basic juridical and administrative documents which provided the foundations for the Latin American Agency created by the Treaty. To date the General Conference has held 10 regular sessions and 4 special sessions in accordance with the provisions of article 9.

Analytical Summary of the Treaty of Tlatelolco

As a complement to the above brief survey of the preparatory work leading to the conclusion of the Treaty of Tlatelolco, the following paragraphs are intended to give a general idea of its contents and to carry out a brief analytical summary of some of its main provisions.

The Treaty comprises a preamble, 31 articles, a transitional article and two Additional Protocols.

The preamble defines the fundamental aims pursued by the States which drafted the Treaty by stating their conviction:

“That military denuclearisation of Latin America—being understood to mean the undertaking entered into internationally in this Treaty to keep their territories forever free from nuclear weapons—will constitute a measure which will spare their peoples from the squandering of their limited resources on nuclear armaments and will protect them against possible nuclear attacks on their territories, and will also constitute a significant contribution towards preventing the proliferation of nuclear weapons and a powerful factor for general and complete disarmament.”

It is also worth noting that the Final Document approved by the first special session of the General Assembly devoted to disarmament, which met in May-June 1978, contains several declaratory statements of a striking similarity to those included in the 14-year old preamble of the Treaty of Tlatelolco:

The Latin American States, for instance, declared themselves convinced:

“That the incalculable destructive power of nuclear weapons has made it imperative that the legal prohibition of war should be strictly observed in practice if the survival of civilisation and of mankind itself is to be assured,

“That nuclear weapons, whose terrible effects are suffered, indiscriminately and inexorably, by military forces and civilian population alike, constitute, through the persistence of the radioactivity they release, an attack on the integrity of the human species and ultimately may even render the whole earth uninhabitable.” The United Nations, for its part, has proclaimed:

“Mankind today is confronted with an unprecedented threat of self-extinction arising from the massive and competitive accumulation of the most destructive weapons ever produced. Existing arsenals of nuclear weapons alone are more than sufficient to destroy all life on earth.”

“Unless its avenues are closed, the continued arms race means a growing threat to international peace and security and even to the very survival of mankind.”

“Nuclear weapons pose the greatest danger to mankind and to the survival of civilisation.”

“Removing the threat of a world war—a nuclear war—is the most acute and urgent task of the present day. Mankind is confronted with a choice:

we must halt the arms race and proceed to disarmament or face annihilation.”

As to the articles of the Treaty, their contents may be described briefly as follows:

Article 1 defines the obligations of the parties. The four following articles (2-5) provide definitions of some terms employed in the Treaty: contracting parties, territory, zone of application and nuclear weapons. Article 6 deals with the “meeting of all the signatories”, while articles 7-11 establish the structure and procedures of OPANAL, created by the Treaty, and state the functions and powers of its principal organs: the General Conference, the Council and the Secretariat. The five succeeding articles (12-16) and paragraphs 2 and 3 of article 18 describe the functioning of the control system, also established by the Treaty. Article 17 contains general provisions on the peaceful use of nuclear energy and article 18 deals with peaceful nuclear explosions.

Article 19 examines the relations of OPANAL with other international organisations, while article 20 outlines the measures that the General Conference shall take in cases of serious violations of the Treaty, measures mainly involving simultaneous transmission of reports to the Security Council and the General Assembly of the United Nations. Article 21 safeguards the rights and obligations of the parties under the Charter of the United Nations and, in the case of States members of the Organisation of American States, under existing regional treaties. Article 23 makes it binding for the contracting parties to notify the Secretariat of OPANAL of any international agreement concluded by any of them on matters with which the Treaty is concerned.

The settlement of controversies concerning the interpretation or application of the Treaty is covered by article 24. Articles 22, 25-27, and 29-31 contain what is generally known as “final clauses” dealing with questions such as privileges and immunities, signature, ratification and deposit, reservations (which the Treaty does not admit), amendments, duration and denunciation, and authentic texts and registration. The transitional article specifies that “denunciation of the declaration referred to in article 28, paragraph 2, shall be subject to the same procedures as the denunciation” of the Treaty, except that it will take effect on the date of delivery of the respective notification, not three months later as provided in article 30, paragraph 2, for denunciation of the Treaty. Article 26, paragraph 2, designates the Government of Mexico as the “Depositary Government”, while article 7, paragraph 4, stipulates that the headquarters of OPANAL will be in Mexico City.

Finally, article 28 reflects in its text the compromise formula which, as already explained, overcame the most serious obstacle which confronted COPREDAL: the entry into force of the Treaty.

As a complement to the preceding brief explanation of the contents of the Treaty, it seems advisable to examine more closely a few of its most significant provisions: those dealing with the obligations of the parties, the zone of application of the Treaty, the definition of nuclear weapons, the system of verification and control and the use of nuclear energy for peaceful purposes. Some comments will also be in order with regard to the two Additional Protocols to the Treaty.

As regards the *obligations* of the parties to the Treaty, the Latin American States have drawn up a definition which is undoubtedly one of the most comprehensive ever produced on a world or regional level.

Under article 1, the contracting parties undertake to “use exclusively for peaceful purposes the nuclear material and facilities which are under their jurisdiction, and to prohibit and prevent in their respective territories: (a) the testing, use, manufacture, production or acquisition by any means whatsoever of any nuclear weapons... and (b) the receipt, storage, installation, deployment and any form of possession of any nuclear weapons”, by the parties themselves, directly or indirectly, on behalf of anyone else, by anyone on their behalf or in any other way. The parties also undertake “to refrain from engaging in, encouraging or authorising, directly or indirectly, or in any way participating in the testing, use, manufacture, production, possession or control of any nuclear weapon”.

The provisions of article 4 concerning the *zone of application* of the Treaty resulted from the procedure adopted in article 28 for the entry into force of the Treaty. This procedure had as a consequence two possible interpretations of the term “zone of application”: (a) a moveable zone, in constant progression, and (b) a fixed, clearly defined zone. These two different concepts are outlined, respectively, in paragraphs 1 and 2 of article 4.

The first of these paragraphs (establishing that “the zone of application of this Treaty is the whole of the territories for which the Treaty is in force”) has been used up to the present, and according to what was contemplated therein, the extension and population of the zone has grown gradually as the number of contracting States has increased.

The second paragraph states that “upon fulfilment of the requirements of article 28, paragraph 1, the zone of application of this Treaty shall also be that which is situated in the western hemisphere within the following limits...”. The limits are then defined according to a series of geographical co-ordinates. It suffices to say that a zone so defined includes considerable areas of the high seas which, in the western part of South America, extend to hundreds of kilometres from the coasts, without naturally implying some pretension of sovereignty or jurisdiction over these sectors. Moreover, in the light of the fact that the northern-most loxodromic line of the zone corresponds to 35 degrees north latitude, the paragraph in which it is explained expressly excepts the continental part of the territory of the United States and its territorial waters. Had this area not been so specified, it would have been included in the Latin American nuclear weapon free zone, since it reaches south of the parallel mentioned.

The definition of the term *nuclear weapon*, which the Preparatory Commission finally approved after considering and rejecting several drafts, is included in article 5. It has the merit of being objective, precise and in accordance with the most recent technological advances. For the purposes of the Treaty, “a nuclear weapon is any device which is capable of releasing nuclear energy in an uncontrolled manner and which has a group of characteristics that are appropriate for use for warlike purposes”. In addition, the Treaty provides that “an instrument that may be used for the transport or propulsion of the device is not included in this definition if it is separable from the device and not an indivisible part thereof.”

As previously mentioned, the provisions on *verification and control* appear in articles 12-16 and article 18, paragraphs 2 and 3. As Secretary-General U Thant emphasised in his message to the Preparatory Commission in February 1967, when the Treaty was approved, those provisions mark the first time that an international Treaty dealing with disarmament measures includes an effective control system with its own permanent organs of supervision. The system calls for the full application of IAEA safeguards, but its scope is much greater. It is to be used not only to verify “that devices, services and facilities intended for peaceful uses of nuclear energy are not used in the testing or manufacture of nuclear weapons”, but also to prevent any of the activities prohibited in article 1 from being carried out in the territory of the contracting parties with nuclear materials or weapons introduced from abroad, and to make sure any explosions for peaceful purposes that

might be carried out are compatible with article 18. Moreover, the Treaty assigns important functions of control to the three main organs of OPANAL and provides for the submission by the parties of periodic and special reports, for special inspections under certain circumstances, and for the transmission of the reports on those inspections to the Security Council and General Assembly.

From the beginning of the deliberations at REUPRAL in November 1964, one of the fundamental concerns of the participating States was the *use of nuclear energy for peaceful purposes*. This was demonstrated by the fact that the first resolution adopted at that meeting applied to this question and spelt out that “denuclearisation” should be understood to mean the absence of nuclear weapons but not, of course, the rejection of the peaceful uses of the atom. On the contrary, that very resolution emphasised the appropriateness of encouraging international co-operation in the peaceful uses of nuclear energy, particularly for the benefit of the developing countries.

Subsequently, the second and third sessions of the Preparatory Commission adopted similar texts which, with slight modifications, were to become one of the paragraphs in the preamble to the Treaty, drafted in the following terms:

“...the foregoing reasons, together with the traditional peace-loving outlook of Latin America, give rise to an inescapable necessity that nuclear energy should be used in that region exclusively for peaceful purposes, and that the Latin American countries should use their right to the greatest and most equitable possible access to this new source of energy in order to expedite the economic and social development of their peoples.”

The Treaty itself establishes the right, with no limitations other than those that may flow from the obligations assumed under the Treaty, to use nuclear energy for peaceful purposes, and specifically provides in article 17, that:

“Nothing in the provisions of this Treaty shall prejudice the rights of the Contracting Parties, in conformity with this Treaty, to use nuclear energy for peaceful purposes, in particular for their economic development and social progress.”

It was precisely for the purpose of avoiding any misunderstanding concerning the scope of the Treaty and to indicate clearly that what was intended was not civil, but military, denuclearisation that the Preparatory Commission decided, at its last session, to change the original name of

the instrument from "Treaty for the Denuclearisation of Latin America" to "Treaty for the Prohibition of Nuclear Weapons in Latin America".

The desire to encourage and promote the peaceful utilisation of nuclear energy could not, however, have led the authors of the Treaty to forget its primary object, which is set forth in clear, precise, and unambiguous terms in article 1, by which parties undertake, *inter alia*, "to refrain from engaging in, encouraging or authorising, directly or indirectly, or in any way participating in the testing, use, manufacture, production, possession or control of any nuclear weapon". Thus, when drafting the provisions which would later be included in article 18, dealing with nuclear explosions for peaceful purposes, special care was exercised to prevent any attempts to test or manufacture nuclear weapons under the pretext of carrying out such explosions for peaceful purposes, attempts which would completely negate the fundamental purpose involved, the very *raison d'être* of the Treaty.

To this end, the first paragraph of article 18 contains the provision that the contracting parties may carry out explosions of nuclear devices for peaceful purposes, but only if they can show that such explosions are feasible without violation of "the provisions of this article and the other articles of the Treaty, particularly articles 1 and 5". In the last analysis, this means that the explosions in question may be carried out *directly* by the parties to the Treaty only if they do not require the use of a nuclear weapon, as defined in article 5.

An objective analysis of article 18 shows, therefore, that its paragraph 1, as the text reads, is clearly subordinated to articles 1 and 5 of the Treaty. This means that for one of the contracting parties to carry out directly a peaceful nuclear explosion, it will have to provide in advance proof that a nuclear weapon will not be required for that explosion, that is to say, in accordance with the objective definition contained in article 5, that it will not require "any device which is capable of releasing nuclear energy in an uncontrolled manner and which has a group of characteristics that are appropriate for use for warlike purposes".

Since the consensus of experts is that this is at present impossible, it must be concluded that the States parties to the Treaty will not be able to manufacture or acquire nuclear explosive devices even though the devices may be intended for peaceful purposes unless and until technology has developed, for such explosions, devices which cannot be used as nuclear weapons.

There is nothing in the Treaty, however, that prevents parties from accepting, as expressly provided in paragraph 4 of article 18, "the

collaboration of third parties" (obviously nuclear weapon states) in conducting explosions for peaceful purposes. Such collaboration is possible if parties comply with the various obligations specified in paragraphs 2 and 3, which relate to advance information and acceptance of measures of observation, verification and control, to be carried out by the General Secretary and the Council of OPANAL and by IAEA.

The two *Additional Protocols* to the Treaty have identical preambles. Their texts recall resolution 1911 (XVIII) and state the conviction that the Treaty "represents an important step towards ensuring the non-proliferation of nuclear weapons". The texts also point out that the non-proliferation of nuclear weapons "is not an end in itself but, rather, a means of achieving general and complete disarmament at a later stage", and finally express the desire to contribute "towards ending the armaments race". The operative parts of the Protocols are naturally different from one another, although they have identical provisions for duration (the same as that of the Treaty) and for entry into force for the States which ratify each Protocol (the date of the deposit of the respective instruments of ratification).

Under article 1 of Additional Protocol I, those extra-continental States which, *de jure* or *de facto*, are internationally responsible for territories lying within the limits of the geographical zone established by the Treaty would, upon becoming parties to the Protocol, agree "to undertake to apply the statute of denuclearisation in respect of warlike purposes as defined in articles 1, 3, 5 and 13 of the Treaty" to such territories.

One aspect which should be borne in mind is that this Protocol does not give those States the right to participate in the General Conference or in the Council of OPANAL, but neither does it impose on them any of the obligations relating to the system of control established in article 14 of the Treaty (providing for semi-annual reports), article 15 (providing for special reports), and article 16 (providing for special inspections). In addition, the prohibition of reservations included in the Treaty's article 27 is not applicable to the Protocol. Thus, in the Protocol the necessary balance has been preserved between rights and obligations; although the rights are less extensive, the obligations are also fewer.

Under *Additional Protocol II*, the nuclear Powers, upon becoming parties to the Protocol, would undertake: (a) to respect "in all its express aims and provisions" the "statute of denuclearisation of Latin America in respect of warlike purposes, as defined, delimited and set forth" in

the Treaty; (b) not to contribute “in any way to the performance of acts involving a violation of the obligations of article 1 of the Treaty in the territories to which the Treaty applies”; and (c) not to use or threaten to use “nuclear weapons against the Contracting Parties of the Treaty”.

Conclusions

The importance of nuclear weapon free zones has been emphasised several times by the United Nations. The General Assembly, in its resolution 3472 B (XXX) of 11 December 1975, stated that “nuclear weapon free zones constitute one of the most effective means for preventing the proliferation, both horizontal and vertical, of nuclear weapons and for contributing to the elimination of the danger of a nuclear holocaust”.

Subsequently, on 30 June 1978, the General Assembly, in the Programme of Action adopted by consensus at its first special session devoted to disarmament, stressed the significance of the establishment of nuclear weapon free zones as a disarmament measure and proclaimed that “the process of establishing such zones in different parts of the world should be encouraged with the ultimate objective, of achieving a world entirely free of nuclear weapons”.

The weight which the international community attaches to the Latin American nuclear weapon free zone was manifest from the very moment the Treaty of Tlatelolco was presented to the General Assembly. In its resolution 2286 (XXII) of 5 December 1967, the General Assembly welcomed it “with special satisfaction” and declared that it “constitutes an event of historic significance in the efforts to prevent the proliferation of nuclear weapons and to promote international peace and security”. Such weight was once again evidenced when, in the general debate of the special session, no fewer than 45 States made comments supportive of the Treaty.

The Treaty of Tlatelolco has shown the crucial importance of *ad hoc* preparatory efforts, such as those carried out for two years by COPREDAL, in attaining the desired goal. Furthermore, the Latin American nuclear weapon free zone, which is now nearing completion, has become in several respects an example rich in inspiration to others, notwithstanding the different characteristics of each region. It provides profitable lessons for all States wishing to contribute to broadening the areas of the world from which nuclear weapons, those terrible instruments of mass destruction, will be forever proscribed.

THE FUTURE OF TLATELOLCO 20 YEARS AFTER ITS SIGNATURE

A Major Pioneering Effort

A little over 20 years ago, on 14 February 1967, the Treaty for the Prohibition of Nuclear Weapons in Latin America, the Treaty of Tlatelolco, was opened for signature in Mexico. That event marked the culmination of several years of efforts, which began with the 29 April 1963 Declaration of five Latin American presidents and were concentrated in the two years of work of the Preparatory Commission for the Denuclearisation of Latin America (COPREDAL).

The outcome of this work was the Treaty of Tlatelolco, the first international agreement designed to keep an inhabited area of the planet free of nuclear weapons. There can be no doubt that this was a particularly courageous undertaking and that its great merits deserve recognition. It was also a pioneering effort, for earlier international instruments with some comparable provisions barely touched on the substance of the question and concerned uninhabited regions of the Earth, for instance, the Antarctic Treaty, or outer space, for instance, the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies.

The Treaty of Tlatelolco concerns an entire inhabited continent, which comprises some 30 sovereign States and in which nuclear activities are being carried out. It is easy to see why the problems which must be faced and solved in such a case are, therefore, qualitatively and quantitatively very different from those which may affect areas which are not even inhabited.

The negotiators of the Tlatelolco Treaty had to draft a set of articles which would reflect adequately both the obligations and the rights to be exercised by States parties so that the objectives of the Treaty might be achieved without undermining the peaceful uses of nuclear power. They also had to design a system of control and verification which would ensure compliance with the commitments assumed. At the same time, two Additional Protocols had to be drafted to cover, respectively, the situation of States outside the continent which, *de jure* or *de facto*, were responsible for territories within the Treaty's zone of application, and the position of the nuclear Powers *vis-a-vis* the zone. All of this had to be done without the benefit of pre-existing similar international agreements or detailed plans emanating from initiatives in other regions,

which, in addition to their intrinsic merits, would have stood the test of time, or even of any significant amount of specialised writing on the subject of nuclear weapon free zones.

Moreover, the delegates participating in COPREDAL's work came from Latin American countries which, for the most part, had yet to embark on any kind of nuclear activity and did not have officials particularly equipped to discuss the many complex problems involved in establishing and operating a nuclear weapon free zone. Even those States which had begun to develop nuclear energy for peaceful purposes were not very far advanced in the use of nuclear technology.

The nine volumes of documentation (drafts, amendments, reports, records, etc.) published by the Ministry of Foreign Affairs of Mexico are adequate testimony to the intensive, thorough effort made by COPREDAL delegates and advisers. Nothing comparable accompanied the negotiation of the South Pacific Nuclear Free Zone Treaty, but this is obviously due to the fact not that its authors were any less concerned with the issue, but that the drafters of the Rarotonga Treaty were able to draw on the experience of Tlatelolco and other documents which followed the path it opened up, above all the United Nations comprehensive study of the question of nuclear weapon free zones in all its aspects. When we bear in mind all the difficulties and different drawbacks which the negotiators of the Tlatelolco Treaty had to face, what is surprising is not so much that the Treaty should have omissions and defects, but that the latter should be so few in number. There is no doubt that the Treaty for the Prohibition of Nuclear Weapons in Latin America was an important milestone in international efforts to somehow limit the effects of the geographical spread of nuclear weapons and is a pioneering achievement of which the Latin American countries can be justly proud.

Present and Future of the Treaty of Tlatelolco

The value justifiably attached to the Treaty of Tlatelolco does not of course mean that it is a perfect instrument and cannot be improved upon, nor should it preclude a dispassionate assessment of its present situation and future prospects. This is probably the best contribution that can be made to the celebration of the twentieth anniversary of its signature, rather than echoing the well-deserved praise that has been heaped on it on countless other occasions.

So far, the Treaty of Tlatelolco has entered into force for 23 Latin American States that have ratified it. It has also been ratified by Brazil

and Chile, but is not in force for those countries because they have not waived the requirements of article 28. Argentina has signed it but not ratified it. Cuba has communicated officially that it will become a party to the Treaty only when the Guantanamo base ceases to be under foreign control. Belize and Guyana have statutory difficulties in signing the Treaty and, lastly, a number of newly independent Caribbean States—Dominica, Saint Lucia, Saint Vincent and the Grenadines, and Saint Kitts and Nevis—have yet to accede to the Treaty.

One initial conclusion that we can draw is that, contrary to the widespread view, the Treaty of Tlatelolco is not in force for almost all the Latin American countries. Quite a number of these countries remain on the sidelines. The situation of some of them, particularly the new Caribbean States, will possibly become clear in the not too distant future. It seems reasonable, however, to acknowledge that Argentina, Brazil, Chile and Cuba are not going to accede fully to the Treaty in the near future. These are all important countries, and the fact that the Treaty is not in force for them is clearly a serious drawback.

One further comment is appropriate in this connection. The reasons invoked by Cuba are not related directly to the Treaty itself. Chile's attitude is governed by that taken by Argentina and Brazil and would probably change if these two countries changed their position. In the final analysis, the future of Tlatelolco depends to a large extent on the position ultimately taken by Argentina and Brazil. Further, it is no exaggeration to say that, until Argentina and Brazil accede fully to the Treaty of Tlatelolco, it will be incomplete. These two countries are substantially larger in area than all the Latin American States parties to the Treaty put together. The combined population of all the States parties is not much more than that of Argentina and Brazil and, what is more relevant to the objectives of the Treaty of Tlatelolco, these two States are much more advanced in nuclear technology than other countries in the region and considerably more advanced than the States members of the zone in general.

The above observations reflect the actual situation and in no way imply value judgements as to the status of any country in particular. They are intended solely to bear out the statement that full accession to the Treaty of Tlatelolco by Argentina and Brazil—actually, full accession by all the States that have yet to become parties, but particularly those two countries—is absolutely essential if the Treaty is to fully achieve its ends and the success sought by its authors.

It appears reasonable and appropriate, therefore, to investigate and describe briefly the defects and gaps, both in the Treaty and its Additional Protocols and in their application, which are usually invoked as a reason and/or explanation for States' reluctance to become parties to the Treaty. It should be pointed out that the criticisms described below are not exhaustive, nor do they all emanate from Argentine or Brazilian sources. It should also be explained that their mention here does not necessarily mean that they are all justified or that they are all equally forceful or important.

By identifying omissions and defects, we are not seeking to detract from an international instrument whose value is widely recognised. Any agreement can be improved, and this is especially true here, where most of the authors lacked the necessary experience to be able to predict a number of problems that nuclear activity, then in its infancy, would bring with it. Moreover, two decades of experience more than suffice to demonstrate that some predictions were not borne out by the facts and that, conversely, the Treaty did not cover some eventualities which later materialised. Although it lasted only a few years, the actual process of drafting the Treaty of Tlatelolco brought some changes to the original proposal. For instance, the prohibition of "nuclear launching devices" advocated in the 29 April 1963 Declaration of five Latin American presidents was omitted from the Treaty, and for substantive, non-formal reasons, the actual wording of the title of the Treaty came to be "for the Prohibition of Nuclear Weapons in" instead of "for the Denuclearisation of Latin America.

A thorough knowledge of the obstacles to the full applicability of the Treaty of Tlatelolco is the first step towards choosing, if this is considered necessary, appropriate methods for removing them, methods which may or may not, as the case may be, require possible revisions of the Treaty (as envisaged in article 29), the drafting of further Additional Protocols, the adoption of resolutions by the General Conference, and even finding a way to put an end to conflicting interpretations of the same provision. Whatever procedures are appropriate, the time has arrived to set in motion some process leading to a revision of the Treaty and its Protocols in order, if possible, to overcome the drawbacks encountered. Inaction, on the other hand, might be interpreted as acceptance of the *status quo* or implicit recognition that the situation currently prevailing with regard to the Treaty's applicability is the best that can be achieved. It is far from ridiculous to think that, in the absence of serious efforts to consider thoroughly the criticisms or

objections made, simple reiteration of appeals for signature, ratification or the waiver of the requirements of article 28 will not only be unproductive, but also give at least the appearance that such criticisms and objections are not viewed as serious or well founded.

A brief description follows of the main objections and criticisms which, particularly in recent years, have been levelled at the text of the Treaty of Tlatelolco and its Additional Protocols, and its implementation. The order in which they appear does not, of course, imply any order of importance.

1. *Special reports and inspections.* Articles 15 and 16, which form part of the system of control established by the Treaty, provide for the submission of special reports and the conduct of special on-site inspections. In the latter case in particular, the potential scope is enormous; since "full and free access to all places and all information" which the inspectors may consider necessary has to be granted, the procedure would involve an excessive degree of interference. The observer for Brazil to the tenth General Conference of OPANAL (Agency for the Prohibition of Nuclear Weapons in Latin America), held at Montevideo, Uruguay, from 27 to 30 April 1987, emphasised the need to ensure appropriate protection "for the legitimate interests of our countries" and added:

"An example of this is the matter of industrial secrets. The inspections laid out in article 16 could imply the risk that the indispensable confidentiality of certain industrial processes would not be sufficiently guaranteed, which would bring about the possibility of unjustifiable harm to the States involved.

"In the same fashion, the aforementioned inspections would not be restricted, as would be normal, to industrial and technological activities of a specific nuclear nature, being able to extend, presumably, to innumerable sectors. This fact is particularly significant if we keep in mind that about eighty per cent of the components and material used in nuclear activities originate in non-nuclear industrial sectors."

It must be remembered that, under article 16, subparagraphs 5 and 6, the reports resulting from special inspections have to be transmitted to all States parties to the Treaty, the Secretary-General of the United Nations, the United Nations Security Council and General Assembly, and the Permanent Council of the Organisation of American States.

This prompted the Argentine observer to the tenth General Conference of OPANAL to state that:

“My country has invested great efforts to achieve the development of vanguard technology and, as I have said before, is inclined to share the benefits of this effort, but like any country which has a certain level of scientific and technological development, it could not allow such a broad dissemination of information with important economic value, leaving its industrial secrets unprotected.”

Ironically, the rigorous system of control represented by special inspections does not apply to territories in Latin America which are, *de jure* or *de facto*, under the jurisdiction of nuclear weapon Powers, for Additional Protocol I makes no provision to that effect. This situation is anomalous, because the potential for the existence of nuclear weapons in the Latin American region is obviously far greater in areas under the control of nuclear weapon states than in the territories of non-nuclear weapon states. It would not be possible to verify reports of the existence of nuclear weapons in Puerto Rico or the Malvinas (Falkland Islands), for instance, assuming that OPANAL wished to do so, since the legal requirement of article 16 does not extend to the countries which ratified Additional Protocol I. Under article 1 of the Protocol, those countries are required to conclude safeguards agreements with the International Atomic Energy Agency (IAEA), but, apart from the fact that only the Netherlands has concluded such an agreement, their existence would not solve the problem because they would apply only to civilian installations.

2. *Safeguards agreement.* Article 13 of the Treaty requires contracting parties to negotiate safeguards agreements with IAEA, and most of them have complied with this requirement. A fundamental question remains, however. Up to now, the Latin American States parties to the Treaty of Tlatelolco have also been parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), so that the IAEA secretariat's practice of offering, pursuant to article 13 of the Treaty of Tlatelolco, safeguards agreements based almost word for word on those prepared under article III of the NPT has not caused any difficulties.

Problems arise and will continue to arise when safeguards agreements are negotiated with Latin American States which, far from being parties to the NPT, are firm opponents of this international instrument. Brazil has not even begun to negotiate such an agreement. Argentina, although it has not ratified the Treaty of Tlatelolco, has followed the example of member countries of the European Atomic Energy Community (EURATOM) and Japan, which negotiated their safeguards agreements with IAEA before ratifying the NPT. In 1979,

Argentina initiated talks with the IAEA secretariat with a view to drafting an acceptable safeguards agreement, but so far these efforts have produced no results.

The question is not an easy one. On the one hand, as was rightly noted by the General Secretary of OPANAL at the XXXth General Conference of IAEA, Argentina's desire for a safeguards agreement specifically modelled on the letter and spirit of the Treaty of Tlatelolco is absolutely valid and will of course represent a new stage in the history of IAEA safeguards. IAEA will doubtless co-operate in achieving this.

Moreover, it is to be assumed that the IAEA secretariat does not act arbitrarily and that, to some extent at least, the conditions emanating from the NPT have to be observed in decisions of the Agency's governing bodies. All this has led to an impasse which will not be easily resolved. At the same time, it must be borne in mind that it will be very difficult for a country to become a party to the Tlatelolco regime if it has not first reached a safeguards agreement with the IAEA secretariat which it, the State, deems satisfactory.

Furthermore, one question remains. What happens if the facts show that, even with the greatest good faith on both sides, it is impossible for a State and IAEA to agree on a safeguards agreement as envisaged in article 13? The Treaty of Tlatelolco was concluded in 1967, when IAEA had a safeguards system in force and the NPT did not yet exist. Just because IAEA decided to change its safeguards system to bring it into line with the provisions of the later Treaty, should this influence the type of safeguards agreements that the IAEA secretariat has to sign with Latin American countries under the earlier Treaty?

3. *Subordination of the Treaty of Tlatelolco to the NPT.* This question is different from the earlier ones. It has to do with a tendency, sometimes explicit, generally tacit, to regard the Treaty of Tlatelolco as a kind of regional version of or appendix to the NPT, as if in relation to NPT it were one of those regional arrangements or agencies envisaged in Article 52 of the United Nations Charter. One consequence of this approach is the interpretation that there can be no conflict of norms between the two international instruments, as if their objectives and characteristics were the same and that, as a result, the less important instrument (obviously Tlatelolco) cannot authorize something which the NPT prohibits and, if there is definitely a conflict between the two, the provisions of the NPT must naturally prevail.

This tendency to subordinate one Treaty to the other is reflected, for example, in the description of the Treaty of Tlatelolco as “an instrument in force subject to the provisions of article VII” of the NPT or in the comment that “the Conference observes the growing interest in utilising the provisions of article VII” of the NPT, when the Treaty of Tlatelolco was, in fact, concluded more than a year before that Treaty. The interpretation which is being given to article VII of the NPT, which grants no rights and authorises nothing, but merely establishes that the NPT cannot prevail over a pre-existent right to conclude regional denuclearisation treaties, is a curious, and perhaps self-serving one.

This question is not a purely academic one, for the deliberate or unintentional subordination of the Treaty of Tlatelolco to the NPT has practical consequences which may be of minor importance to States which are parties to both international instruments, but which are certainly of major importance to countries like Argentina, Brazil, Chile and Cuba, none of which has signed the NPT.

4. *Peaceful nuclear explosions.* This subject has been discussed more than any other in relation to the Treaty of Tlatelolco. For the author of this paper, there is no room for doubt on this score. Article 18 is absolutely clear. The carrying out of nuclear explosions for peaceful purposes is expressly permitted, even when “devices similar to those used in nuclear weapons” are used. There are only two conditions: that the procedures described in subsequent paragraphs of article 18 be followed and that the provisions of articles 1 and 5 of the Treaty not be violated. Both articles refer exclusively to *nuclear weapons*, and what article 18 logically aims to prevent is the use of peaceful explosions to develop nuclear weapons. This is the main purpose of the monitoring and control procedure that it establishes.

No better demonstration could be found of the approach of subordinating the Treaty of Tlatelolco to the NPT than what has happened with peaceful nuclear explosions. It seemed inconceivable that the Treaty of Tlatelolco would authorize what the NPT prohibited. Forced interpretations of article 18 therefore began to be made in an attempt to make it say what it did not say, i.e., that peaceful nuclear explosions are prohibited. Those nuclear weapon Powers which are parties to the NPT considered themselves authorised to include in the declarations accompanying their signature or the deposit of their instruments of ratification of Protocols I and II (neither of which mentions article 18) their interpretations of the “correct” scope of that provision, which was of course bound to accord with the NPT.

There is no need to elaborate further on this topic, except to emphasise that it is still important. The question of peaceful nuclear explosions is as vital and relevant as ever, despite attempts to prove the contrary. Every year, the Soviet Union conducts a certain number of peaceful nuclear explosions, and if it does so it presumably considers them useful and economical.

5. *Reservations to Additional Protocol II.* The Protocol contains the solemn undertakings made by the nuclear weapon states to; (a) respect the statute of denuclearisation of Latin America in respect of warlike purposes; (b) not to contribute in any way to the performance of acts involving a violation of the obligations of article 1 of the Treaty; and (c) not to use or threaten to use nuclear weapons against the contracting parties to the Treaty.

It is easy to see the tremendous importance and significance of the undertakings made. Although the name "Additional Protocol" gives the impression that this is a secondary instrument, it can be said, without exaggeration, that Protocol II is an international instrument of the same value as the Treaty itself, which, in its essential aspects, would be meaningless were it not accompanied by valid, enforceable and verifiable undertakings by the nuclear Powers, which offered no loopholes.

An improper practice has considerably undermined the effectiveness of Additional Protocol II. Article 4 of the Protocol expressly stipulates that article 27 of the Treaty, which prohibits reservations, shall be applicable. Despite such a clear provision, which cannot possibly be misconstrued, the Governments of France, the Soviet Union, the United Kingdom and the United States accompanied their ratification of Additional Protocol II with what were undeniably reservations, all of them designed to cover situations in which their authors would consider themselves not bound by their undertakings to refrain from the threat or use of nuclear weapons against States parties to the Treaty of Tlatelolco. The United Kingdom's declaration goes so far as to state quite clearly that that Government would feel free to reconsider how far it might be deemed bound by the provisions of Additional Protocol II. It should be recalled that article 3 of the Protocol envisages an absolute commitment on the part of the nuclear Powers, with neither conditions nor escape clauses.

It seems reasonable to conclude, first, that actual reservations have been entered with respect to Additional Protocol II, despite the prohibition on them and, secondly, that this situation, by raising

understandable doubts as to the practical scope of the undertakings made, considerably diminishes the value of that international instrument.

6. *Impossibility of verifying compliance with Additional Protocol II.* Additional Protocol II has also given rise to other doubts. Articles 1 and 2 contain the nuclear powers' undertaking to respect the statute of denuclearisation of Latin America in respect of warlike purposes and, *inter alia*, not to introduce nuclear weapons into the zone of application of the Treaty.

The conflict in the South Atlantic, which brought a Latin American country into confrontation with a nuclear weapon power, gave rise to a number of experiences and reflections with regard to the functioning of the regime of the Treaty of Tlatelolco. Without entering into a discussion of the reasons for the conflict, one can conclude that there is no way of ascertaining whether the obligations entered into by nuclear weapon countries under articles 1 and 2 of Additional Protocol II are actually being fulfilled or not. Different arguments might be advanced to explain why this is so, but the fact is that the undertakings are legally unverifiable. This state of affairs not only creates a climate of uncertainty as to the operation of Protocol II, but also contrasts sharply with the strict system of control in force for States parties, which are precisely the countries which do not have weapons of mass destruction and want to keep such weapons out of the Latin American zone for ever.

A number of Latin American countries, in particular Argentina and Brazil, have repeatedly drawn attention to this worrying state of affairs in various forums, including the General Assembly, the Conference on Disarmament and the OPANAL General Conference. Recently, the observer for Brazil to the tenth General Conference of OPANAL put it succinctly:

"That is why there is an exhaustive mechanism in the Treaty to verify compliance by States Parties with their obligations. It is necessary to establish as a counterpoint adequate and reliable procedures to verify compliance with the obligations of the nuclear weapon Powers in regard to the Zone. Only with the adoption of these procedures, which are today non-existent, can we assure the indispensable balance between the responsibilities and commitments of each of the groups of States involved. This measure is a demand of the security proposals of the zone of application of Tlatelolco which recent experience confirms."

7. *Other matters.* The above criticisms and doubts seem to be those most often levelled at the text and application of the Treaty of Tlatelolco and its Additional Protocols. They are not the only ones, however.

There are other unresolved issues which have been under discussion since the Treaty was negotiated, for instance, the problem of the transit and transport of nuclear weapons, which gave rise to conflicting declarations by the Soviet Union, on the one hand, and the United States, France and the United Kingdom, on the other, when they ratified the Protocols.

Other problems, such as that of nuclear-powered submarines, although not unknown at the time of the drafting of the Treaty of Tlatelolco, later became so widespread and serious as to warrant fresh examination. If we bear in mind that there are at present over 550 nuclear reactors installed in ships and above all submarines—more than are installed on land—and that nuclear-powered missile submarines have become a virtually uncontrollable weapon because of their speed, depth and time of submersion and the destructive capability of their nuclear warheads, we should ask ourselves whether a Treaty with the aims set forth in the preamble to the Treaty of Tlatelolco can afford to go on ignoring, in its regime, the implications of nuclear propulsion systems when they are used for warlike purposes.

Final Comments

The Treaty of Tlatelolco is celebrating its twentieth birthday. The mere fact that it was concluded and signed was in itself a considerable achievement. Gradually, many Latin American countries became parties to it, extra-continental States acceded to and ratified its Additional Protocols, and its regime was consolidated. All this is naturally a source of justifiable satisfaction for its authors and supporters.

At the same time, two decades of operation are sufficient experience to identify and evaluate any defects and lacunae. It would be not only pointless but also counter-productive to overlook the fact that a number of Latin American countries have not acceded fully to the regime of the Treaty or to ignore their criticisms and doubts about it. It would be advisable to recognize these problems, study them and try to solve them, in whatever way is feasible and acceptable. If, on balance, the process proves a positive one, a step will have been taken towards making the Treaty fully operational. In the worst hypothesis, nothing will have been lost in comparison with the present situation.

Any international instrument can be improved on, and the Treaty of Tlatelolco and its Additional Protocols are no exception. To try to improve the Treaty would perhaps be the best way to join in the celebration of the twentieth anniversary of its signature.

OPANAL AND THE TREATY OF TLATELOLCO

The tenth regular session of the General Conference of the Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean (OPANAL) was held in Montevideo, Uruguay, from 27 to 30 April 1987. The main document before the delegates was the report of the General Secretary on the Agency's work during the two years prior to the Conference.

Conscious of the danger that an unbridled nuclear arms race entails for the life of the planet itself, the General Secretary referred to the meeting of the heads of State and Government of Argentina, Greece, India, Mexico and Sweden and the first President of the United Republic of Tanzania at Ixtapa, Mexico, in August 1986 and to their call for "an immediate halt to nuclear testing preparatory to a comprehensive test-ban treaty, for a cessation in the production and development of all nuclear weapons and delivery systems...". The General Secretary also mentioned the two meetings held between the President of the United States and the General Secretary of the Central Committee of the Communist Party of the Soviet Union, at Geneva in November 1985 and at Reykjavik in October 1986, praising the leaders and stating that the roads that may lead to peace can only be travelled in successive stages, through extremely complex negotiations and mutual concessions.

He emphasised the importance of the Treaty of Tlatelolco, which established a zone of application as the best way to avoid the nuclear-arms race in Latin America and to give its inhabitants confidence that the nuclear danger would be more remote. He also pointed out that Latin America's example had already produced practical results: in August 1986, the Treaty of Rarotonga, which created the South Pacific nuclear free zone, was opened for signature, and in December 1987, it entered into force. The General Secretary underlined efforts to establish other nuclear free zones.

His main concern was that the Treaty of Tlatelolco be signed and ratified as soon as possible by the States within its zone of application. He reminded the Conference that resolution 208 (IX) expressed the necessity of creating "conditions to ensure the full enforcement of the Treaty of Tlatelolco and the strict compliance with the provisions established by said instrument and its Additional Protocols". A working group established for that purpose and composed of the countries on the Good Offices Committee—Jamaica, Mexico and Peru—as well as Costa Rica and Venezuela had assumed with responsibility the tasks

that were entrusted to it. Although the Treaty of Tlatelolco was not yet in force for all sovereign States in the zone, it was for most of them. Consequently, it covered an enormous territory and offered guarantees to a large population. It was viewed with sympathy and understanding, and its principles and objectives were respected even by those American States that were not yet parties to it. The General Secretary pointed out, however, that a joint effort by all Governments of member States was required to achieve the final step in the process, particularly since nuclear weapons proliferation represented a growing danger and some countries in the region had attained spectacular accomplishments in the field of nuclear technology. He maintained that once the formative process had been completed, the zone would definitively remove the danger of a nuclear catastrophe and also ensure that nuclear energy, produced by the disintegration of the atom, would be used for peaceful purposes for the benefit of the peoples of the region.

At the time of the Conference, five Latin American and Caribbean States had not yet expressed the desire to sign the Treaty: Cuba, Dominica, Saint Lucia, Saint Kitts and Nevis, and Saint Vincent and the Grenadines. Two others, Belize and Guyana, had not yet been invited by the General Conference to subscribe to it, since a special regime was provided for those political entities part or all of whose territories were the subject, prior to the date of the opening for signature of the Treaty, of a dispute or claim between an extra-continental country and one or more Latin American States, so long as the dispute had not been settled by peaceful means. It was expected that this problem would be resolved in as short a time as possible, taking into consideration the fact that the Organisation of American States, on its XVth General Assembly, held at Cartagena de Indias, Colombia, in December 1985, had adopted modifications to article 8 of its charter (similar to paragraph 2 of article 25 of the Treaty of Tlatelolco). This amendment opened new perspectives regarding the possible linking of these two countries with the Treaty of Tlatelolco.

The Governments of Dominica, Saint Lucia, Saint Kitts and Nevis, and Saint Vincent and the Grenadines had been invited to become parties to the Treaty once they had become independent. When they were territories administered by the United Kingdom, they were militarily denuclearised as a consequence of the fact that the United Kingdom was a party to Additional Protocol I of the Treaty.

On several occasions, the Cuban Government had stated that it would not adhere to the Treaty until the United States withdrew its

military presence from Guantanamo. However, the General Secretary believed that Cuba would eventually agree that the best guarantee against all possible external nuclear attack would be its signature and ratification of the Treaty of Tlatelolco. Moreover, that action would show, without question, not only its desire for peace, but also its firm commitment to military denuclearisation, as had been expressed many times by the Cuban authorities.

With reference to Argentina, the General Secretary reported on contact with representatives at the highest level of the Government in the search for ways that might lead to the completion of the process of adherence of Argentina to the Tlatelolco system.

He was pleased by the Declaration of Foz do Iguacu, issued by the presidents of Argentina and Brazil in November 1985, as well as those countries' signature of a nuclear safety protocol to enhance co-operation between the two States with the most developed nuclear technology in Latin America. The General Secretary considered that if the links of friendship and dialogue between those two countries were strengthened and generated political will, there would be greater possibilities for the entire continent to adhere fully to the Treaty of Tlatelolco.

Article 13 of the Treaty of Tlatelolco states that each contracting party shall negotiate multilateral or bilateral agreements with the International Atomic Energy Agency (IAEA) for the application of its safeguards to its nuclear activities. At the time of the Conference, 18 States parties had complied with this article, which is fundamental to the control system of the Treaty.

The safeguards agreements have an extraordinary importance, since it is through them that the sovereign States that are parties to the Treaty permit an international agency to carry out systematic and periodic inspections on delicate and important installations located in their respective territories. Safeguards have to be considered by the countries that apply them to their nuclear activities as essential measures to inspire confidence in their respective regions and in the world.

Given the interest of the international community in a verification system which functions properly and inspires confidence, it is important that support for the only control system in the nuclear sector not be undermined by arguments that safeguards impose limitations on the sovereign rights of States to plan their policies in this field, or that they might imply distrust in the nuclear activities carried out by these Governments.

The IAEA safeguards are directly based on the statute of the Agency, and both the Treaty of Tlatelolco and the nuclear non-proliferation Treaty make use of these safeguards in such a fashion that most of the agreements are negotiated in conformity with the obligations contracted by the States parties to both Treaties. However, the General Secretary stated in his report that one must not lose sight of the fact that there are States linked to the Treaty of Tlatelolco which are not parties to the non-proliferation Treaty and for which safeguards agreements should establish commitments in accordance with the spirit and the letter of the Treaty of Tlatelolco.

In that regard, during the seventh regular session of the General Conference, the Government of Argentina expressed the need for IAEA to draft an agreement especially adjusted to the spirit and the letter of the Treaty, which establishes no limitation whatsoever on the peaceful uses of nuclear energy, not even on carrying out nuclear explosions for peaceful purposes. It also expressed the view that IAEA imposed a safeguards agreement model applicable to the non-proliferation Treaty, a practice which Argentina seriously contested before the Agency's Board of Governors.

The representative of Argentina also informed the Conference that from 18 to 20 October 1978, informal consultations had been held with the secretariat of IAEA, during which substantial differences had arisen over the content of the safeguards agreement to be negotiated once Argentina ratified the Treaty of Tlatelolco. It believed that it would be appropriate, before proceeding to that ratification, to clearly define a safeguards agreement with IAEA so that the Agency, in regard to Argentina, would implement the control system established by the Treaty of Tlatelolco.

As a result, a draft agreement was prepared in August 1979, to which Argentina made serious objections in November of the same year. In June 1981, IAEA submitted objections to this counter-proposal, which were not accepted by Argentina. However, Argentina stated that its achievements in the field of the peaceful use of nuclear technology encouraged it to share the benefits beyond its borders, not confining them to the regional framework, but making them available to the non-aligned countries and to the Members of the United Nations in general.

During his attendance at the XXXth regular session of the General Conference of IAEA, the General Secretary held a meeting with the Director General of the Agency, Dr. Hans Blix, in order to find the

means to surmount the impasse that had arisen between the Government of Argentina and IAEA regarding negotiation of a safeguards agreement. The meeting was fruitful inasmuch as the Director General expressed a broad desire to co-operate to surmount such difficulties. During that Conference, the General Secretary also expressly gave his support to the request by Argentina for conclusion of a safeguards agreement specifically drafted to the letter and the spirit of the Treaty of Tlatelolco.

Regarding nuclear explosions for peaceful purposes, it is the opinion of both IAEA and the scientific establishment that, despite technological advances, it is not possible to distinguish a nuclear explosion for peaceful purposes from one of a different nature. It is important to point out that although article 18 of the Treaty of Tlatelolco recognises the right of States parties to carry out peaceful explosions, under the strict control of OPANAL and IAEA, the Director General of IAEA has underlined that his Agency's supervision can only be implemented within the "guidelines for the international observation, by the Agency, of nuclear explosions for peaceful purposes under the provisions of the non-proliferation Treaty or analogous provisions in other international agreements".

It can be affirmed that this right, established by article 18 of the Treaty of Tlatelolco, cannot be disregarded, but may, in the future, be affected by technological advances that will allow an appropriate distinction to be established between a nuclear explosion for peaceful purposes and others with different intent or character—a distinction that could be stated within the framework of a future safeguards agreement to be negotiated between Argentina and IAEA.

At the tenth regular session, Brazil and Chile shared the point of view of Argentina on this matter.

Based on resolution C. 20, adopted by the Council of the Agency on 28 April 1986, the General Secretary requested the United States and the United Kingdom to comply with article 1 of Additional Protocol I, which provides that all States parties to the Protocol comply with article 13 of the Treaty and negotiate with IAEA the safeguards agreements provided for therein. The United States reported that it had already initiated negotiations with IAEA in accordance with article 13 of the treaty. The general conference took note of this information and reaffirmed the obligation of States parties to Additional Protocol I to negotiate and conclude agreements for those territories under their jurisdiction.

At its tenth session, the General Conference took action on the following matters, among others. It reaffirmed that the safeguards system applied by IAEA to States parties in compliance with article 13 of the Treaty, together with the additional control measures provided for in articles 12, 14, 15, 16, 18, 20 and 23, were sufficient guarantee to ensure the non-proliferation of nuclear weapons and that their implementation was an adequate basis for facilitating international co-operation in the peaceful use of nuclear energy. Additional demands for supervision and control imposed unilaterally or jointly by countries providing nuclear material, equipment or technology constituted an unacceptable practice, incompatible with the sovereign rights and independence of the developing countries.

The conference expressed its satisfaction at the development of IAEA's Regional Co-operative Arrangements for the Advancement of Nuclear Science and Technology in Latin America (ARCAL) and its hope that all the countries of the region might take part in the programme. It also entrusted the General Secretary with the task of renewing negotiations with the Inter-American Nuclear Commission of Energy in order to conclude a co-operative agreement for the peaceful use of nuclear energy in the region.

The Council congratulated the members of the South Pacific Nuclear Free Zone Treaty (Treaty of Rarotonga) for their achievement, which has enlarged the denuclearised area of the planet. In addition, the Council decided to examine various means of banning radioactive pollution, including an additional protocol to the Treaty of Tlatelolco, and of prohibiting the dumping of radioactive waste and other radioactive materials at sea within the zone. The General Secretary was asked to prepare an analysis of the relationship between the nuclear weapons free zone of Latin America and the Caribbean and the zone of peace and co-operation of the South Atlantic, as well as a draft of an additional protocol whereby explosions for peaceful purposes would be made following the rules of radiological protection accepted by the international community.

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PROSPECTS FOR A NUCLEAR WEAPON FREE ZONE IN AFRICA

“Nuclear weapons pose the greatest danger to mankind and to the survival of civilisation. It is essential to halt and reverse the nuclear arms race in all its aspects in order to avert the danger of war involving nuclear weapons. The ultimate goal in this context is the complete elimination of nuclear weapons.”

When, in 1978, representatives at the tenth special session of the United Nations General Assembly in their collective wisdom made the ideal of the complete elimination of nuclear weapons their ultimate goal, they undoubtedly recalled the awesome lethality of the nuclear bombs that had laid Hiroshima and Nagasaki waste in the closing stages of the Second World War.

Even before that epoch-making special session, the efforts of the international community had been geared towards reducing the dangers posed by such lethal devices, which constituted a threat to the very survival of mankind. However, strategies for reducing the danger of nuclear catastrophe invite a number of varying approaches. Regional measures to halt and reverse the proliferation of nuclear weapons in specific regions by establishing nuclear weapon free zones (NWFZs) have been one of the most salient and practical of such approaches. This concept has figured prominently in resolutions of the United Nations General Assembly at successive sessions. For example, on 11 December 1975, the General Assembly, at its thirtieth session, adopted resolution 3472 B (XIII), which stated, *inter alia*:

“nuclear weapon free zones constitute one of the most effective means for preventing the proliferation, both horizontal and vertical, of nuclear weapons and for contributing to the elimination of the danger of a nuclear holocaust”.

In successive years, the General Assembly adopted resolutions on NWFZs as they related to different regional and geographical zones. In 1975 the Assembly went even further. It invited 21 intergovernmental experts to conduct what was termed a comprehensive study on the question of nuclear weapon free zones in all its aspects. But, it was during the tenth special session devoted to disarmament that the General Assembly adopted its most important document on the subject of NWFZs. It proclaimed:

“The process of establishing such zones in different parts of the world should be encouraged with the ultimate objective of achieving a world entirely free of nuclear weapons.”

The main proposals in this regard have sought to establish such zones in Latin America, Africa, South Asia, the Pacific, the Indian Ocean, Central Europe, the Balkans, the Adriatic, the Mediterranean, Northern Europe and the Middle East.

In a rapidly evolving world order in which interdependence is fast becoming the norm, global security is becoming symbiotically related to, if not totally dependent on, regional security. Sporadic regional disputes, under such conditions, can more readily spill over to, and encompass, those nuclear Powers external to the region, culminating in a catastrophic nuclear confrontation. International security is therefore interrelated with, if not dependent on, regional security. Thus, the establishment of nuclear weapon free zones would assuredly make a positive contribution, not only to the non-proliferation regime in general and to the prevention of the spread of nuclear weapons in particular, but also to the limitation of the nuclear arms race. Although the primary purpose of a nuclear weapon free zone is to:

“enhance national and regional security, it should also be seen as a part of the process of averting nuclear weapon proliferation, of arresting the nuclear arms race, and of diminishing the danger of nuclear war. Thus with this process the interests of all States are involved.”

It is for such reasons that regional initiatives such as the establishment of NWFZs have gained increasing international recognition. Some may view such regional initiatives as falling within the framework of disarmament measures proper. Others may see them as mechanisms that are complementary to collateral measures of disarmament, such as the non-proliferation of nuclear weapons, confidence-building measures, and the development of peaceful uses of nuclear energy. But, in whatever manner and by whatever yardstick the concept of NWFZs is assessed, it is virtually impossible to resist the conclusion that nuclear weapon free zones constitute:

“a potentially useful instrument of reducing the possibilities of a nuclear war, diminishing the risks of a nuclear arms race, and consolidating universal efforts to strengthen international peace and security in an interdependent but precarious global environment”.

Even a minimal definition of a NWFZ will contain references to the prohibition of the importation, deployment or development of any nuclear weapons by all members inside the zone. But a more comprehensive definition of the concept can be found in General Assembly resolution 3472 B (XXX), adopted on 11 December 1975, which states, in part, as follows:

“A ‘nuclear weapon free zone’ shall, as a general rule, be deemed to be any zone recognised as such by the General Assembly of the United Nations, which any group of States, in free exercise of their sovereignty, has established by virtue of a treaty or convention whereby:

“a. The statute of total absence of nuclear weapons to which the zone shall be subject, including the procedure for the delimitation of the zone, is defined;

“b. An international system of verification and control is established to guarantee compliance with the obligations deriving from that statute.”

All the same, there should be no doubt in our minds as to the serious limitations inherent in NWFZs as a reliable disarmament measure. The concept of NWFZs is, at best, only a means towards an ultimate end. Without requisite collateral measures, NWFZs will hardly be viable as a credible security arrangement. The Norwegian scholar, Johan J. Hoist, stated in 1983:

“A NWFZ constitutes no panacea. It cannot substitute for a national security policy, nor can it remove the threat of nuclear war. It is primarily a confidence-building measure which needs to be tailored to the specific circumstances of the region in question and to the links which exist between that region and broader systems of international order. It is a possible instrument in support of broader purposes.”

It must always be borne in mind that, the concept of NWFZs can help in controlling nuclear weapons; it cannot eliminate them. The issue of control versus elimination is therefore, in this context, cardinal. Some analysts even view NWFZs as laying a basis for an unstable and dangerous situation by rendering the region victim to its own power distribution, especially when some members enjoy superiority in the conventional field, thereby giving rise to relatively greater instability whereby a weaker State in the region would be unable to resist the temptation to use nuclear weapons in the event that it felt gravely

threatened by another State that had marked superiority in conventional weapons.

Be that as it may, the concept of NWFZs, when reinforced with other arms control and disarmament initiatives, offers a basis for avoiding the dangers of nuclear war, the proliferation of nuclear weapons and a threat to world peace and security. NWFZs present an incremental but important achievement towards international stability. If the realisation today of the goals of general and complete disarmament seems unattainable in a world governed by political tension, mistrust, and lack of negotiations on fundamental arms control and arms reduction measures, NWFZs can lay the groundwork by increasing confidence as regards a better future.

Denuclearisation of Africa

We have analysed the concept of nuclear weapon free zones and considered its usefulness as a regional security measure: it is apposite now to trace the origins of this concept on the African continent. The aim is to determine whether such a concept is a viable regional security measure that all African States should embrace in their short- and long-term interest and, more important, to explore whether a structured NWFZ in Africa that is organically linked to other collateral security measures at the global level would enhance the cause of general and complete disarmament which the United Nations has long set as the ultimate objective of the international community.

The proposal to establish a NWFZ in Africa was made in 1960 following a French nuclear test in the African Sahara. One year later, by its resolution 1652 (XVI) of 24 November 1961, the General Assembly called on all States to refrain from conducting any nuclear tests in Africa and from using the continent to test, store or transport nuclear weapons, and to respect the status of Africa as a NWFZ.

In Cairo, in 1964, the Assembly of Heads of State and Government of the Organisation of African Unity (established the previous year) adopted the Declaration on the Denuclearisation of Africa. Undoubtedly, the African heads of State and Government intended, in that historic decision, to fulfil two basic obligations: first, the conclusion of an agreement (although no time frame was stipulated), under United Nations auspices, not to manufacture nuclear weapons; and secondly, the call on all major nuclear Powers to respect the principles and provisions of the Declaration. In 1965 the General Assembly, by its resolution 2033 (XX) of 3 December 1965, endorsed the Declaration

and called upon all States to desist from testing, manufacturing or deploying nuclear weapons in Africa.

Thereafter the resolution was submitted annually to the General Assembly, with some cosmetic changes reflecting any new developments on the African scene as they related to the Cairo Declaration. The twin issues of the call on all States to respect the African NWFZ and of the Declaration on the denuclearisation of the continent steadfastly continued to feature prominently in the resolutions submitted to the General Assembly every year from 1965 on. The need to prevent the proliferation of nuclear weapons from spilling even onto the African continent remained a cardinal factor in the collective security strategy of African Governments. It was not surprising therefore that a large number of African States embraced the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) as soon as it was concluded in 1968 and when it entered into force in 1970. At the time of the Fourth Review Conference of the NPT in 1990, some 40 States out of 51 independent countries in Africa had become States parties to the NPT, representing a record 80 per cent of the African States.

The NPT was conceived as a centre-piece of international non-proliferation efforts. At the time of its creation, the NPT was seen as the boldest attempt to use a multilateral approach to balance concerns for international security with the desire to use nuclear energy for peaceful purposes. The operative articles of the Treaty clearly demonstrate the need to balance the rights, obligations and benefits of the parties. The main objective of the Treaty is to prevent the spread of nuclear weapons to States that do not possess them. Another primary objective of the Treaty is to provide for co-operation in the peaceful uses of nuclear energy, consistent with the objective of non-proliferation.

Article VI of the Treaty, however, imposed an obligation on the nuclear weapon states. By it they undertook to pursue negotiations in good faith on effective measures 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. It is the monumental failure of the nuclear weapon states to deliver on this key issue after two decades that triggered a justified sense of indignation and even betrayal among developing countries, including those in Africa which signed the NPT. It was in protest to that unsatisfactory state of affairs that developing States parties to the NPT were motivated to block agreement on a final declaration, at both the Second Review Conference, in 1980, and the Fourth Review Conference, in 1990.

None the less, in spite of this flaw in the record of the operation of the NPT, there is general agreement that the existence of the Treaty has helped immensely in decelerating the spread of nuclear weapons at least horizontally. The existence of the Treaty is also seen as a key factor in reinforcing international public opinion, which tended to mirror the acquisition of nuclear weapons by new States as being contrary to international norms and to the interests of global security and stability, to which Africa's regional security and political stability are intrinsically linked.

It is against such a background that South Africa's destabilisation policies, including the *apartheid* regime's criminal record of naked aggression against the African front-line States, can best be assessed as a major stumbling-block in the way of the establishment of an African NWFZ. It is also pertinent to observe that some fairly credible evidence has emerged that South Africa, through its clandestine nuclear programme coupled with a growing military arrogance in the late 1970s and the decade of the 1980s, might well have acquired a nuclear capability in a grand design to silence opposition at home and to intimidate neighbouring sovereign African States through nuclear threats and blackmail. Pretoria's refusal both to sign the NPT and to conclude a safeguards agreement with the International Atomic Energy Agency (IAEA) has further strengthened the suspicion that South Africa seemed intent on acquiring a nuclear weapon capability. African countries could not ignore the South African factor in their effort to transform their concept of a NWFZ into that of a legally binding instrument such as the Treaty of Tlatelolco, which declared Latin America a nuclear weapon free zone. A United Nations publication entitled *Study on All the Aspects of Regional Disarmament* describes the regional and global purposes of the Treaty of Tlatelolco in this way:

"... On the one hand, the Treaty was designed to strengthen peace and security in the region, to avert the possibility of a regional nuclear weapons race, and to protect the parties against possible nuclear attacks. At the same time, it was conceived as a significant contribution towards preventing the proliferation of nuclear weapons and as an important factor for general and complete disarmament."

The Treaty of Tlatelolco thus provides an example and a classic model of the way in which a United Nations resolution can pave the way for the realisation of a NWFZ in a given or designated area through the international treaty process. Unfortunately for African States, South Africa's conduct and blatant defiance of the United Nations resolutions meant that it could not be associated with the negotiations for establishing

such a zone, nor could the Pretoria regime be realistically ignored in any negotiations for a credible mechanism such as a NWFZ designed to guarantee security and stability on the continent.

Be that as it may, the South African situation should not be allowed to frustrate the progress towards the establishment of a NWFZ in Africa, for indeed, there are other strong inducements on the part of African States for an early concretisation of regional security mechanisms that are both affordable and reasonably dependable, given the greater need on the part of African countries to make better use of their scarce and dwindling resources in the greater interest of economic growth and development.

Recent studies point conclusively to the fact that, in spite of prevailing economic difficulties, African States still spend a rather disproportionate amount of their resources on the importing of armaments. Africa's share of world military expenditure in 1959 represented only a token 3 per cent of the expenditure by the entire third world. By 1979, it had risen to 25 per cent of the expenditure by the entire third world. Thus Africa had its share of the arms sales explosion of the mid-1970s and early 1980s. The relationship between arms purchase and resource availability as distinct from actual security requirements by third world countries is best illustrated by the following figures. The value of arms sales to the Third World in the 1970s rose to the staggering level of \$286 billion, or four times the value in the previous two decades. That figure, it is instructive to note, is much higher than Africa's current crushing external debt burden of \$218 billion or about 26 per cent of total Third World external indebtedness, which is plaguing not only the economic but also the political viability of the debtor countries. For Africa, the economic consequences of such massive acquisition of arms in the 1970s and the early 1980s have been devastating. Africa received no benefits from such acquisitions. Unlike other developing countries in Asia and Latin America, the continent did not even derive any benefit from a transfer of technology.

In the last two decades, some developing countries, taking advantage of the technological expertise acquired from arms transfers, have emerged as competitors in the arms sales market. But only Asian and Latin American countries have carved out credible positions for themselves in the arms sales market. Except for South Africa, which has had all the advantages of collaboration in the development of its arms industry, and with the possible exception of Egypt, no African country has featured among serious arms producers.

In the prevailing unfavourable international economic environment characterised by a decline in commodity prices (from which the majority of African States derive their foreign exchange), unfavourable terms of trade, high interest rates and volatility in exchange rates, compounded by a crushing debt burden, not to mention the perennial and aggravating haemorrhage in development resources, African States can ill afford the prevailing huge capital outlays, all in the name of security.

None the less, it is instructive to remember that Africa is an integral part of the international community and cannot, at least to that extent, be expected to take steps out of harmony with the rest of the world. Disarmament in Africa—which undoubtedly should help to facilitate meaningful growth and development on the continent—can have full meaning and effect only as part of the global process. Conventional disarmament, to have its full effect, needs to be addressed globally, in harmony with major steps taken in Europe, the acknowledged centre of the arms race. The recent progress made in negotiating the Treaty on Conventional Armed Forces in Europe (CFE), which would have a positive impact on that continent from the Atlantic to the Urals, should also have consequential effects in other regions, including Africa. Success in the negotiations in respect of CFE was already crystallising into a restoration of mutual trust and confidence as well as a general reduction of tension and a dilution of ideological rivalries and Super-Power competition, if not confrontation.

In the circumstances, Africa's main security preoccupation could then be reduced to the mere acquisition of military hardware essential for the protection of sovereignty but at the lowest military level.

Fortunately, the noticeable easing of Super-Power rivalry and competition has also had a positive impact in Africa, with President De Klerk taking some encouraging steps towards dismantling *apartheid* in South Africa. The recent dramatic announcements from Pretoria on 1 February 1991 promising the abrogation of the obnoxious core *apartheid* legislation, such as the Land Acts, the Group Areas Act and the Population Registration Act, have raised hopes for an early emergence of a united, non-racial and democratic South Africa that would soon be able to rejoin the comity of nations.

In that event, African States will be emboldened to embark on regional security arrangements that will peg military outlays at the lowest level without the risk of diminished security. In the prevailing international economic environment, in which Eastern Europe has emerged as a major competitor for the dwindling global resources

available for development, Africa needs to garner and manage prudently its own scarce foreign exchange in furtherance of the superior goals of economic growth and sustainable development. It is also in this context that the final concretisation of the concept of a nuclear weapon free zone for the whole continent seemed feasible, since such a zone would include a South Africa that is essentially sanitised from *apartheid*. By modelling such a NWFZ concept on the spirit and letter of the Treaty of Tlatelolco, African States would also have succeeded in eliminating, perhaps for all time, the threat that any part of the continent could ever become a target for nuclear attack, intimidation or blackmail.

Fortunately, all of the elements necessary for the establishment of a credible NWFZ in Africa are abundantly present. Some 40 out of the 51 African States—80 per cent of the entire continent—have already become parties to the NPT. The front-line States are poised to follow suit as soon as South Africa obliges by signing up as well. And the prospects for an African NWFZ have been further brightened in the rapidly evolving political developments in Pretoria itself against the background of heightened expectations triggered on 1 February by President De Klerk's dramatic announcement of his Government's intention to abrogate the residual core *apartheid* laws. In sum, the political climate in the African region seems auspicious for embarking on serious negotiations that would eventually crystallize into a nuclear weapon free zone embracing the entire African continent. African Governments would be well advised to take full advantage of the current favourable wind in international relations if this unique opportunity for shoring up Africa's security apparatus with a credible NWFZ is not to be lost.

It is well known that the acquisition of weapon-grade enriched uranium begins invariably as a spin-off from an ongoing nuclear programme ostensibly slated for peaceful purposes. Would it not be more sensible to avoid being caught in a situation in which a given State yields to the temptation to manufacture nuclear weapons for political reasons especially since it is now generally acknowledged that a nation's security can no longer be guaranteed by the acquisition of nuclear weapons? In any event, given the prohibitive cost of embarking on any form of nuclear programme even for peaceful purposes, and taking into account the grim possibilities of accidents such as those of Three Mile Island in the United States and Chernobyl in the Soviet Union, African States would be better off seeking alternative sources of energy which are feasible and affordable, such as solar energy. If

well developed, solar energy has the potential to supply electricity even to Africa's remotest villages at economical rates.

The central challenge in Africa today is not over the nuclear option *per se*. Other challenges facing the continent seem endless: how to feed the hungry and the malnourished; how to get out of the strait-jacket of debt; how to combat the menace of locusts through the use of suitable and efficacious pesticides; how to provide basic social and health facilities; and how, after two and a half decades of political independence, to attain effective economic sovereignty.

In all these problems, the rational priority is, arguably, not the acquisition of the nuclear capability, whether for prestige, national self-image, deterrence or security. Instead, priority ought to be accorded to economic development by African Governments. Funds earmarked for prestigious nuclear programmes could more sensibly and profitably be utilised in the productive sectors of Africa's economies to stimulate economic recovery and growth in real terms. These are the factors that make the case for nuclear non-proliferation anchored on a credible NWFZ embracing the entire African continent virtually unassailable. By guaranteeing the zone against nuclear attack, threat or blackmail, the two Super-Powers and their respective allies, in the new positive spirit of close *rapprochement* in their bilateral relations in the post-cold-war era, would thereby strengthen Africa's security in particular and, to that extent, reinforce international peace and security in general.

IMPLEMENTING A NUCLEAR WEAPONS FREE ZONE IN AFRICA

The Prospects for an African Nuclear Weapon free Zone

Hopes that a nuclear weapon free zone in Africa might at last be in prospect were raised by a statement by the South African Government on 17 September 1990. The significant passages read:

"Various African States have recently expressed the view that the African continent should become a nuclear weapons free zone.... The South African Government welcomes these suggestions. Indeed the South African Government has itself consulted a number of African Governments on the desirability of establishing a nuclear free zone at least in the Southern African region. Such a move would further remove suspicions and should strengthen the economic and geographical cohesion of the region.... the South African Government is prepared to accede to the [non-proliferation] Treaty in the context of an equal commitment by other states in the Southern African region."

The statement did not indicate what other States were meant. It did, however, welcome the accession of Mozambique to the non-proliferation Treaty (NPT) on 12 September 1990 as “one of South Africa’s closest neighbours”, the implication being that South Africa was awaiting the accession of other close neighbours.

The statement went on to say that

“... the Government trusts that in the near future talks can commence with the International Atomic Energy Agency on concluding a comprehensive safeguards agreement on the country’s nuclear facilities”.

The first round of discussions with the International Atomic Energy Agency (IAEA) took place in mid-February 1991 and it is understood that the results were satisfactory.

Fundamental Elements of a Nuclear Weapons Free Zone

The General Assembly has defined a nuclear weapon free zone as a zone “recognised as such by the General Assembly” in which a treaty or convention drawn up by the States concerned, “in the free exercise of their sovereignty,” requires “the... total absence of nuclear weapons” and “an international system of verification and control... to guarantee compliance...”.

In the resolution the General Assembly also called upon the nuclear weapon states to undertake by treaty to respect the total absence of nuclear weapons from the region, to refrain from contributing to a violation of the zonal treaty and to refrain from using or threatening to use nuclear weapons against any zonal State (that is, to provide “negative security assurances” to the parties to the treaty).

Hence the chief elements to be considered in creating a nuclear weapons free zone for any region include:

- Its geographical scope;
- The basic obligations to be accepted by parties, by extra-zonal States that control territories in the zone, and by the nuclear weapon states;
- Additional requirements that might be appropriate for the region;
- Arrangements that should be made for verification of compliance with the basic obligations;
- The steps that should be taken to bring the zone into existence;
- The possibility of linking it with other nuclear weapon free zones.

The Geographical Delimitation of an African Nuclear Weapon Free Zone

Continents, Oceans and Subregions

In the nuclear context the principal characteristic of Africa is that, although it is second to Asia in size, only five States possess nuclear plants and that, apart from some small research reactors, all these plants are in one State, South Africa, which is also the only State that has today the technical ability to make nuclear weapons. Other features are that no extraregional State except Spain controls territories on the continent of Africa and that since the early 1960s no nuclear tests have been carried out in Africa or contemplated there by any nuclear weapon State.

These characteristics should make it less difficult than in the case of the nuclear weapon free zones of the South Pacific (where nuclear testing continues) and Latin America (where extraregional States still possess sizeable territories) for the nuclear weapon states to accept the banning of nuclear tests in the zone, to respect the nuclear free status of the zone and, depending on the maritime coverage of the zone, to apply its statute to territories under their control.

The most extensive concept of an African nuclear weapon free zone would cover all of continental Africa and all of the islands possessed by continental States as well as the island members of the organisation of African Unity (OAU), the territorial waters of all the States concerned and the adjacent seas and oceans. A less extensive concept would leave out, at least initially, the adjacent seas and oceans. Both these concepts have the advantage that the geographical concept of Africa is exceptionally well defined. This is seldom the case in other regions proposed as the subject of nuclear weapon free zones. A third possibility would be to create one or more subregional nuclear weapon free zones, for example south of the Sahara desert or south of the equator, with or without their adjacent oceans.

One of the first questions to be considered is whether there should or could be an overlap with the proposed Middle East nuclear weapon free zone. At a minimum the latter will include Egypt and the Libyan Arab Jamahiriya in its African part, but it may include the Sudan and the five Maghreb countries. In that case, it would also cover the small Spanish enclaves of Ceuta and Melilla.

There is no inherent reason why a State should not be party to two treaties creating nuclear weapon free zones provided that there is no

conflict between its obligations under each treaty. However, some Arab States that are members of OAU might be reluctant to become members of an African nuclear weapon free zone until further progress had been made in defining the obligations that they might have to accept under a Middle East zone. Some might also fear that by joining an African zone they would be weakening the incentives to create a Middle East zone. They would then have accepted the constraints that a nuclear weapon free zone imposes on its parties while leaving free from such constraints the only State in the Middle East that is assumed to have nuclear weapons, namely Israel.

Gradual Extension of Coverage

This situation argues for a gradual approach. For instance, the African States might establish a zone that would in principle cover all of Africa and that every member of the OAU would be eligible to join. The entry into force of the zonal treaty would not, however, be contingent on its ratification by the States on the Mediterranean littoral, the Atlantic Maghreb and the Sudan. All of the latter would be free to accede when they chose to do so. However, certain minimum conditions would have to be met. One of these is the membership of South Africa. Another would be to set the number of eligible States that must ratify the zonal treaty before it came into force and possibly to delimit a group of core countries, besides South Africa, whose adherence would also be a prerequisite for the entry of the treaty into force.

Maritime Limits

The South Pacific Nuclear Free Zone Treaty (the Treaty of Rarotonga) entered into force in 1986 when eight eligible States had ratified it. Its nuclear free zone immediately covered a large and defined area of the South Pacific, extending southward to the limits of the Antarctic Treaty and eastward to the eventual limits of the Treaty for the Prohibition of Nuclear Weapons in Latin America (the Treaty of Tlatelolco). In contrast, the Treaty of Tlatelolco covers today only the territories (including the territorial waters) of the States that have brought it into force for themselves. It will eventually extend over a large area of the adjacent oceans but only when all eligible States have brought it into force and when certain other conditions have been met.

Once again there is a good argument for a gradual approach in defining the maritime limits of an African nuclear weapon free zone. The island States members of the OAU (and their territorial waters) should clearly be eligible to be members of the zone. However, one

may question how meaningful it would be immediately to seek to extend the zone over large areas of the Mediterranean Sea frequented constantly by the warships of the nuclear weapon states carrying nuclear weapons.

It might raise fewer problems to extend the coverage of the zone in the South Atlantic Ocean so as to link up with Antarctica and the region that will eventually be covered by the Treaty of Tlatelolco. Here too there would be some question about the practical significance of such coverage. It would not prevent the innocent passage of warships carrying nuclear weapons. The testing of nuclear explosives under the South Atlantic as well as in the atmosphere above it is already prohibited by the partial test-ban Treaty. Verification of compliance with the requirements of a treaty over vast areas of ocean would also be an immense task. None the less, a link with the Antarctic and Tlatelolco nuclear weapon free zones might have a symbolic value (discussed below).

Bringing the Zone into Force

In gradually extending its own geographical scope, an African nuclear weapon free zone might select elements from both of the existing treaties. Once the minimum number of ratifications had been deposited—or the core set of countries had ratified—the treaty would enter into force (like the Treaty of Rarotonga) but only within the territories of those States that had ratified it or acceded to it (as in the case of the Treaty of Tlatelolco). But unlike the procedures laid down by the Treaty of Tlatelolco, there should be no need for an African State to waive any of the provisions of the African treaty to bring it into force for itself nor should full entry into force have to await actions by extraregional States. Each eligible State would bring the treaty into force for itself by the act of depositing an instrument of ratification.

When all eligible States had acceded, the limits of the treaty might automatically be extended to cover areas of ocean to the west and south. These areas should be defined in the treaty itself and should make its limits contiguous with the region already covered by the Antarctic Treaty and with that eventually to be covered by the Treaty of Tlatelolco. Soon afterwards, a conference of the parties might consider the question of extending the limits of the treaty so as to cover defined areas of the Mediterranean, the Red Sea and the Indian Ocean, taking account of progress made in establishing a nuclear weapon free zone in the Middle East and a “zone of peace” in the Indian Ocean.

Subregional Variants

A nuclear weapon free zone confined to sub-Saharan Africa or to the African States south or partly south of the equator would help to achieve, at least for many years, the paramount aim of ensuring the total absence of nuclear weapons from the African region since it would include the only State that now has the technical ability to manufacture a nuclear weapon. There might, however, be problems in delimiting the geographical boundaries of the subregion and in securing its recognition by the United Nations. The establishment of such a zone would also offer no enduring assurance of a nuclear weapon free zone covering all of Africa.

None the less the creation of such a subregional zone might be more easily and quickly achieved than the formal denuclearisation of the entire continent and should not be ruled out. It might be an interim step towards the larger objective.

Most of the issues raised in the following part of this article would apply to a subregional zone as well as to a zone covering all of Africa.

Provisions and Prohibitions of a Treaty Establishing an African Nuclear Weapon free Zone

Obligations under Other Treaties

To permit comparison, a brief summary is appended of the obligations that non-nuclear weapon states accept under the NPT, and that the five nuclear weapon and other extraregional States as well as the parties themselves accept under the Treaty of Tlatelolco and the Treaty of Rarotonga.

Essential Provisions and Prohibitions Under an African Treaty

The treaty must require its parties to renounce the possession or acquisition of, or control over, any nuclear weapons by any means anywhere. Following the example of the NPT and the Treaty of Rarotonga, the parties to the African treaty must also explicitly renounce the use of nuclear explosives for all purposes. The Treaty of Tlatelolco's ambiguity about the right of its parties to make and detonate nuclear explosive devices for peaceful purposes has raised several problems and it is possible that in 1977, when Soviet and United States satellites detected South African preparations for a nuclear test, this test, like the Indian test of 1974, would have been justified as a "nuclear explosion for peaceful purposes". This once-vaunted technology has now been abandoned by all of the nuclear weapon states. Following the example

of the Treaty of Rarotonga, the parties to the treaty covering the African zone should also undertake not to seek or receive any assistance in the manufacture or acquisition of nuclear explosives or to assist or encourage the manufacture or acquisition of nuclear explosives by any other State.

The treaty should expressly prohibit the deployment or testing of any nuclear explosives by any State on the territories of the parties or anywhere else in the region.

The treaty should also require the nuclear weapon states to provide “negative security assurances” to the parties, to respect the nuclear weapon free status of the parties and to refrain from contributing to any violation of the treaty. All extraregional States should also be required to apply the basic provisions of the treaty to any territories in the zone that they may control.

As in the case of the Treaties of Tlatelolco and Rarotonga, these undertakings of the nuclear weapon and other extraregional States could be formalised in protocols to the treaty. However, the entry into force of the African treaty should not be made contingent upon the ratification of such protocols. A requirement along these lines in the Treaty of Tlatelolco partly explains why, 24 years after it was opened for signature, it is not yet in force for the region as a whole.

As in the case of the Treaty of Tlatelolco and the Treaty of Rarotonga, no limit should be set on the duration of the treaty concerning Africa. For reasons that will be explained later, the conditions for withdrawal should be more restrictive than in the case of the NPT or the Treaty of Tlatelolco, perhaps along the lines of the Treaty of Rarotonga, which permits withdrawal only in the case of a gross and explicit violation of the Treaty itself.

Optional Prohibitions

The treaty might also expressly prohibit any armed attack by conventional or other means on any nuclear plant situated on the territories of its parties. An undertaking to refrain from such attacks might also be included in the protocols to be ratified by extraregional States.

The African exporters of nuclear plant and fuel are Gabon, Namibia, the Niger and South Africa. The draft final document of the fourth Review Conference of the NPT recommended that all supplying States should require full-scope safeguards as a condition of supply to non-nuclear weapon states. It would therefore be appropriate to include such a clause in an African Treaty. However, the additional requirement

of the Treaty of Rarotonga that nuclear exports to *nuclear weapon states* must be subject to IAEA safeguards might cause difficulties for Gabon and the Niger, whose uranium exports are chiefly to France.

Dumping of nuclear waste at sea is not a problem in the Mediterranean (where it is banned) or in the South Atlantic or Indian Oceans. A clause forbidding sea-dumping would also raise the question of the treaty's coverage of adjacent oceans. This too seems to be a matter that could be left for later negotiations.

Verification, Controls and Sanctions

In view of the long experience of the IAEA in applying safeguards, and to avoid unnecessary expense, IAEA should be given the task of verifying that no party to a treaty on Africa was diverting nuclear materials to nuclear weapons or explosives. This could be simply accomplished by requiring (as the Treaty of Rarotonga does) that each party should conclude an NPT-model safeguards agreement with IAEA.

The Treaty of Tlatelolco foresees a somewhat elaborate regional control system that would require it to establish an inspectorate to carry out "challenge" inspections at the request of any party to the Treaty. Although the Treaty has now been in force in much of Latin America for twenty-four years, its parties have not found it necessary to set up this regional control system. It seems even more unlikely that a system of this kind would be needed in Africa. None the less it would be desirable to establish a small permanent authority, perhaps within the framework of the OAU, to provide the parties with continuing assurance that the main provisions of the African treaty were being complied with. To this end the parties might be required to make periodic reports to a central authority and to IAEA as well as reports on any unusual events. There might be arrangements for investigating complaints similar to those set out in the annex to the the Treaty of Rarotonga. The central authority might deal initially with any infraction of the treaty that was outside the scope of IAEA safeguards.

In place of a regional apparatus to carry out "challenge inspections" of the type foreseen in the Treaty of Tlatelolco, the treaty on Africa might provide that its parties would automatically permit IAEA to carry out the special inspections foreseen in paragraphs 73 and 77 of its NPT safeguards system.

IAEA safeguards verify only that the non-nuclear weapon states have not diverted nuclear material to nuclear explosives. Other violations of the NPT, the Treaty of Tlatelolco and the Treaty of Rarotonga are of

course also conceivable. For instance, a party might clandestinely import a nuclear weapon, an extraregional State might use its territory in the zone for the manufacture or testing of a nuclear weapon, or a nuclear weapon State might threaten a party with nuclear attack. IAEA safeguards have little or no relevance to such violations. No satisfactory international system has yet been devised for detecting many of them. However, the treaty might provide that, if such a violation were detected or openly committed, the control authority of the treaty should promptly report it to the Security Council and the General Assembly of the United Nations as well as to IAEA.

Except for such infractions it would be simpler to follow the example of the NPT and the Treaty of Rarotonga and, in the case of diversion of nuclear material, to rely on the sanctions set forth in the safeguards agreements with IAEA.

The Forum for Negotiating the Treaty

The treaties establishing the Latin American and South Pacific zones were drawn up at conferences of the prospective parties. In the case of the Treaty of Tlatelolco, the conference was also attended by representatives of the nuclear weapon states, the extraregional States concerned, the United Nations and IAEA. The conferences considered drafts prepared chiefly by Mexico and Australia respectively. A similar conference would be an appropriate forum for drawing up an African treaty and the help of the United Nations and IAEA secretariats might be sought in drafting the treaty.

It seems unlikely, however, that other African States would wish to convene such a conference unless South Africa had already renounced nuclear weapons and accepted IAEA safeguards on all its nuclear activities. The first step for the creation of an African zone must be the accession of South Africa to the NPT. This could be accompanied or followed by the accession of other prospective parties, particularly those in southern Africa.

A De Facto Nuclear Weapon free Zone

A *de facto* nuclear weapon free zone or subregional zone could be achieved simply by the accession of South Africa and of all the members of the OAU (or all those in the subregion).

This would require the accession to the NPT of the following States, of which those south or partly south of the equator are marked with one asterisk (*) and those north of the equator and south of the Sahara

are marked with two asterisks (**): Algeria, Angola*, Dahomey**, Djibouti**, Mauritania, Namibia*, Niger**, United Republic of Tanzania*, Zambia* and Zimbabwe*.

Although universal accession to the NPT would help to ensure the total absence of nuclear weapons from the region or subregion, many of the desirable attributes of a nuclear weapon free zone would still be absent, for instance undertakings by the nuclear weapon states to respect the nuclear weapon free status of the region, negative security assurances, and zonal machinery as an additional assurance against proliferation.

Moreover, there is the possibility, however remote, that the NPT might be terminated some time after 1995 or that South Africa, having acceded to the NPT, might later decide to withdraw from it. Unless South Africa's renunciation of nuclear weapons were underwritten by a permanent zonal treaty, the demise of the NPT or South Africa's withdrawal from it would once again leave South Africa free to develop a nuclear weapon capability (in theory, at least, the same would apply to all other African States parties to the NPT). This is one of the reasons why this article recommends that the Treaty should be permanent and that the clause permitting withdrawal should be as restrictive as possible.

A Broader Vision

An African nuclear weapon free zone could be a vehicle for furthering co-operation in the civilian uses of nuclear energy on the continent. There are countless applications of nuclear techniques in industry, agriculture, biological research and hydrology which IAEA is helping to introduce into Africa. This process could be accelerated by drawing on the resources of a reformed and acceptable South Africa.

I have mentioned the possibility of linking an African nuclear weapon free zone southwards to the continent covered by the Antarctic Treaty and westwards across the South Atlantic to the eventual limits of the Latin American zone. When the Treaty of Tlatelolco is fully in force (and recent actions by Argentina and Brazil may bring that day nearer), the South Pacific, Latin America and Antarctica and their surrounding seas will be joined together in one vast zone with which Africa and its oceans could be united.

There is thus the prospect that, before the end of this century, most of the Southern hemisphere would form a great nuclear weapon free zone that would stretch from the coast of western Australia across that continent, the South Pacific, South and Central America, the South Atlantic, Africa and across the Indian Ocean to the island of Mauritius.

Only the northern reaches of the Indian Ocean would remain uncovered. On the oceans, the significance of the zone might be chiefly symbolic but on land it might move northward to encompass first the zone now contemplated by the States of South-East Asia.

APPENDIX

Certain obligations of States parties, of the nuclear weapon states and of other extraregional States under the NPT, the Treaty of Tlatelolco and the Treaty of Rarotonga

The NPT

prohibits

- nuclear weapons and other nuclear explosive devices in non-nuclear weapon states (NNWS) party to it;
- (implicitly) testing of nuclear weapons in NNWS (except “nuclear explosions for peaceful purposes” carried out on the territory of an NNWS by a nuclear weapon State (NWS));
- exports to NNWS for peaceful purposes unless under IAEA safeguards (safeguards on an exported item and its products only); requires
- IAEA safeguards on all peaceful nuclear activities in NNWS party to it;

permits

- deployment of nuclear weapons by NWS on territories of NNWS (e.g. United States nuclear weapons in Germany and in other NATO NNWS);
- military non-explosive uses of nuclear energy (e.g. nuclear submarines);
- unsafeguarded nuclear exports to NWS;
- unsafeguarded nuclear activities in non-NPT NNWS (e.g. Indian power reactors, South African enrichment plant);
- dumping of nuclear waste at sea;

omits

- “negative security assurances” by NWS to NNWS, i.e. assurances by the NWS that they will not use or threaten to use nuclear weapons against the NNWS parties to the treaty.

The following are some additional non-proliferation requirements set by the Treaty of Tlatelolco and the Treaty of Rarotonga.

They prohibit

- deployment of nuclear weapons on territories of parties (Treaty of Tlatelolco and Treaty of Rarotonga);
- deployment of nuclear weapons on adjacent oceans (Treaty of Tlatelolco only although the Treaty of Tlatelolco may permit—or cannot stop—the innocent passage of nuclear-armed warships);
- testing of nuclear weapons anywhere in the zone (Treaty of Tlatelolco implicitly and Treaty of Rarotonga explicitly);
- nuclear exports to any NWS except under IAEA safeguards (Treaty of Rarotonga only);
- nuclear exports to any NNWS except under full-scope safeguards (Treaty of Rarotonga only);
- dumping of nuclear waste in adjacent oceans (Treaty of Rarotonga only);
- non-explosive military uses of nuclear energy (Treaty of Tlatelolco only, though this may be disputed by some parties);

require

- negative security assurances by NWS to NNWS;
- application of the Treaty by extraregional States in the territories they control;

permit

- (in the case of the Treaty of Tlatelolco only) nuclear explosions for peaceful purposes with devices constructed by the parties (though it should be noted that this interpretation is challenged by some parties and by most of the NWS and seems to be nullified by the recent renunciation by Argentina and Brazil of nuclear explosions for any purpose).

Other Provisions

Regional Supervisory Authority: Both the Treaty of Tlatelolco and the Treaty of Rarotonga provide for a regional authority to supervise the implementation of the Treaty. The Treaty of Tlatelolco provides for a regional inspection corps, operating under the regional authority, which would carry out “challenge” inspections at the request of any Party. The Treaty of Rarotonga makes provision for a treaty inspection team to investigate complaints.

Sanctions: Only the Treaty of Tlatelolco provides explicitly for sanctions in the case of a violation. These are, however, similar to the sanctions foreseen in the statute of IAEA for the breach of a safeguards agreement and include notification of the breach to the General Assembly and the Security Council. The NPT and the Treaty of Rarotonga rely indirectly on IAEA sanctions if there should be a diversion of nuclear material to the manufacture of a nuclear explosive.

Duration: The Treaties of Tlatelolco and Rarotonga are permanent treaties. In 1995 a conference of its parties will decide how long IAEA safeguards will be extended.

Withdrawal: A party may withdraw from the NPT if it decides that “extraordinary events, related to the subject matter of this Treaty, have jeopardised [its] supreme interests”. The Treaty of Tlatelolco contains a similar provision but provides an additional ground of “circumstances” that affect “the peace and security” of one or more of its parties. The Treaty of Rarotonga is the most specific: parties may withdraw in the event of a violation by any party of an essential provision of the Treaty. No party has withdrawn from any of the treaties.

Objects prohibited other than nuclear explosives: None of the treaties seeks to prohibit or regulate the acquisition of nuclear weapons systems (e.g. missiles) other than the explosive charge.

Civilian uses of nuclear energy: The NPT and the Treaty of Tlatelolco require that the development of the civilian uses of nuclear energy should not be impeded.

Physical protection of nuclear plant and material: None of the treaties require their parties to apply the Vienna Convention on the Physical Protection of Nuclear Material or other such measures (to prevent terrorist or other criminal misuse or destruction).

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OUTLINE OF EFFORTS TO ESTABLISH A NUCLEAR WEAPON FREE ZONE IN AFRICA

The genesis of the movement for the denuclearisation of Africa is normally traced to opposition on the continent to French atomic testing in the Sahara, announced in 1958 and carried out in 1960. Practically all African countries independent at the time opposed those tests. Morocco sent five protest notes to France between 1958 and 1959 alone. Newly independent Nigeria broke diplomatic relations with France in 1960. At the continental level, the first Conference of Independent African States, which met at Accra in 1958, condemned the French plans and appealed to France not to carry out its tests—a plea which was repeated by the same body at its second meeting, at Monrovia in 1959.

The subject was put before the First Committee of the United Nations General Assembly in 1959 and extensively discussed. At the end of that discussion, the Assembly adopted resolution 1379 (XIV) of 20 November 1959, whereby it expressed “its grave concern over the intention of the Government of France to conduct nuclear tests” in the Sahara, and requested France “to refrain from such tests”.

After France proceeded to conduct its tests in Algeria in 1960, President Nkrumah of Ghana addressed the General Assembly in September 1960, requesting that the United Nations should encourage “the growth of zones free from nuclear warfare.... a start should be made by all nuclear Powers agreeing to keep Africa out of their nuclear warfare plans”. This was in fact, the first public articulation of a desire for the establishment of a nuclear weapon free zone in Africa by anyone. That very year the Ghanaian delegation at the United Nations tabled a resolution aimed at having the United Nations declare Africa “a denuclearised zone”, but that was not put to the vote that year because of a combination of Western and francophone African opposition. The

main objection on the part of most of francophone Africa was that Ghana had no right to table a resolution at the United Nations which had not yet been discussed by African leaders at the continental level. It was clear that, from then on, the major task was to secure an African consensus on the issue.

The following year, mainly as a result of the toning down of the language that had been used in the Ghanaian draft of 1960, particularly as it pertained to France and French actions, the United Nations was able to adopt resolution 1652 (XVI) entitled "Consideration of Africa as a denuclearised zone". In addition to requesting States not to conduct nuclear tests in Africa in any form, this resolution also called upon all States "to consider and respect the continent of Africa as a denuclearised zone".

The next significant steps in this saga were taken at Addis Ababa, Ethiopia. In May 1963, at the founding meeting of the Organisation of African Unity (OAU), the summit Conference of Independent African States adopted a resolution on general disarmament whereby they, *inter alia*, undertook "to affirm and respect the principle of declaring Africa a denuclearised zone". This was the beginning of the African consensus on the idea of the denuclearisation of the continent. In 1964, that consensus was developed further when the Assembly of Heads of State and Government of the OAU adopted the Declaration on the Denuclearisation of Africa, whereby the African countries declared their readiness "to undertake, in an international agreement to be concluded under the auspices of the United Nations, not to manufacture or otherwise acquire control of nuclear weapons". It is on this resolution that all subsequent efforts at the denuclearisation of Africa by the OAU have been based.

The following year, African States put the Declaration before the General Assembly of the United Nations, which endorsed it through resolution 2033 (XX), and expressed the hope that African States would initiate studies aimed at the implementation of the Declaration through the OAU. There the matter rested for the next ten years, with the ball having been thrown firmly back into the court of the OAU by the United Nations with regard to responsibility for implementing the 1964 Declaration. No further action was taken either at the level of the OAU or the United Nations until 1974, when the issue was again raised at the latter organisation.

In its resolution 3261E (XXIX) of 1974, the General Assembly reaffirmed its call upon all States to consider and respect the continent

of Africa as a nuclear free zone; reiterated its call upon all States to respect and abide by the Declaration on the Denuclearisation of Africa; reiterated further its call upon all States to refrain from testing, manufacturing, deploying, transporting, storing, using or threatening to use nuclear weapons on the African continent; requested the United Nations Secretary-General to render all necessary assistance to the OAU towards the realisation of the aims and objectives of the resolution; and decided to include the item on the "Implementation of the Declaration on the Denuclearisation of Africa" in the agenda of the thirtieth session.

From the above it is clear that the 1974 resolution was significant not for its substance, which was basically similar to that of previous resolutions by both the United Nations and the OAU, but for its being adopted at all—its presence, which meant a re-inscription of the subject of the denuclearisation of Africa on the agenda of the international community after an absence of nearly a decade. Thus, perhaps the most important paragraph of the resolution was the last operative one, which served to include the subject in the agenda of the thirtieth and subsequent sessions of the Assembly.

The next resolution of the General Assembly on the subject of the denuclearisation of Africa, 3471 (XXX) of 1975, differed from the 1974 resolution in that the continent of Africa is defined more elaborately as including "the continental African States, Madagascar and other islands surrounding Africa"; in that for the first time the Assembly agreed in an operative context that the implementation of the Declaration on the Denuclearisation of Africa "will be a significant measure to prevent the proliferation of nuclear weapons in the world, conducive to general and complete disarmament, particularly nuclear disarmament", and in that the request to the Secretary-General, unlike that in the resolution of the previous year on the subject, was no longer for assistance aimed at securing the objectives of the resolution, but for assistance aimed at "the realisation of the solemn Declaration on the Denuclearisation of Africa".

Resolution 31/69 of 1976 was dominated by the question of Pretoria's new-found nuclear weapon capability. The thirteenth Assembly of Heads of State and Government of the OAU, held at Port Louis, Mauritius, from 2 to 6 July 1976 had expressed serious concern over the nuclear and other military collaboration of some Western States and Israel with South Africa, which had enabled that country to attain a nuclear capability. Through its 1976 resolution, the General Assembly expressed

concern that further development of South African nuclear capability “would frustrate efforts to establish nuclear weapon free zones in Africa and elsewhere as an effective means for preventing the proliferation, both horizontal and vertical, of nuclear weapons and for contributing to the elimination of the danger of a nuclear holocaust”; and appealed to all States “not to deliver to South Africa or place at its disposal any equipment or fissionable material or technology that will enable the racist regime of South Africa to acquire nuclear weapon capability”.

Clearly, the struggle for the denuclearisation of Africa had begun to focus on the more immediate danger of the nuclearisation of Africa through the attainment of a nuclear weapon capability by South Africa. Not only was South Africa considered a pariah State in Africa, having significant differences with the generality of the other African States, and thus constituting an ever-present source of danger to them, but it was also felt that South Africa would not have been as strong as it was had there not been a deliberate effort on the part of some States, particularly some of the Western States and Israel, to make it so. Moreover, in September 1977, a Soviet satellite had picked up what appeared to be a nuclear-test site under construction in the Kalahari. In its resolution 32/81 of 1977, therefore, the General Assembly condemned any attempt by South Africa to introduce nuclear weapons into the continent of Africa; demanded that South Africa refrain forthwith from conducting any nuclear explosion on the African continent or elsewhere; made an urgent request to the Security Council to take appropriate effective steps to prevent South Africa from developing and acquiring nuclear weapons, thereby endangering international peace and security; and appealed to all States to refrain from such cooperation with South Africa in the nuclear field as would enable the racist regime to acquire nuclear weapons “and to dissuade corporations, institutions and individuals within their jurisdiction from any such cooperation”.

The combating of South African nuclear capability was to dominate the African agenda on denuclearisation for the rest of the 1970s, all the 1980s, up to the present moment in the 1990s. All subsequent resolutions have focused on the South African issue not only as constituting a danger in itself, but also as frustrating the objective of the denuclearisation of Africa. It has been considered proper that African States should fight South African acquisition of nuclear weapon capability. Such capability is, after all, a stark negation of their avowed aim of making Africa nuclear weapon free—a region defined as including all of continental Africa, of which South Africa is a part. South Africa,

moreover, is the most technologically advanced country on the continent in nuclear terms. Stopping it from going nuclear would be definitive of whether African States *could* stop a country that was determined and able to go nuclear.

Resolutions adopted by the United Nations on the question of the denuclearisation of Africa did not change much after the inclusion of the South African factor as a disabling factor in the implementation of the 1964 Declaration, and there is therefore no need to go into detail about each one of them. Rather, it would be more profitable to examine African activity related to this issue in another forum, a forum of great relevance for the continent—the OAU.

The first major pronouncement on the issue of denuclearisation by the African States in the context of the OAU after 1965 was in 1979, when, at its thirty-third Ordinary Session, held in Monrovia, Liberia, from 6 to 20 July, the OAU Council of Ministers adopted a resolution on the denuclearisation of Africa (CM/Res. 718 (XXXIII) Rev. I). Through that resolution, the Ministers expressed their grave concern over nuclear cooperation between South Africa and Israel and over “the threat posed to the security of Africa as a result of South Africa’s nuclear capability through extensive material and technological assistance which it receives from its Western partners”. They also called upon the Western Powers to refrain from supplying South Africa with nuclear material and technology, condemned Israel and all other States for their nuclear collaboration with South Africa, and condemned “the continued and growing cooperation in the nuclear sphere between South Africa’s racist regime and Israel in view of the threat it poses to the security and peace of the African continent and people”.

In 1964, the OAU Secretariat had been asked to prepare a draft convention for the denuclearisation of the continent of Africa. The Secretariat submitted the draft convention to the OAU Council of Ministers meeting at its second ordinary session in Lagos, Nigeria, in February 1964. The Council took note of the draft convention and decided, through its resolution CM/Res. 28 (II), to refer it to the Governments of member States of the OAU for further study and the submission of observations and comments. In their resolution of July 1979, therefore, the Council of Ministers recalled this earlier draft convention and invited OAU member States to study it and transmit their observations and comments thereon to the Secretary-General of the OAU “at the earliest possible date, and in any case, not later than the next Summit Conference”. Essentially, through the 1964 draft

Convention for the Denuclearisation of the Continent of Africa, the African States were to undertake:

- (a) To prohibit, prevent and not carry out any nuclear weapon test as well as the manufacture of nuclear weapons, or any other nuclear explosion at any place under their respective jurisdiction and control;
- (b) Not to receive nuclear weapons, including nuclear launching devices, at any place under their respective jurisdiction and control;
- (c) To prevent carrying out or continuing to carry out in their respective territories nuclear tests in any form;
- (d) To prevent the use of the territory, territorial waters and airspace under their respective jurisdictions for testing, storing or transporting nuclear weapons.

Despite the call contained in the Council of Ministers resolution CM/Res. 718 (XXXIII) Rev. 1, few States submitted their views on the draft, and the Secretary-General was not able to report substantively to the next Assembly of Heads of State and Government, as had been requested of him.

The issue of the denuclearisation of Africa was only taken up again at the level of the OAU in 1987, when the OAU Council of Ministers, meeting in its forty-sixth Ordinary Session at Addis Ababa in July, adopted resolution CM/Res. 1101 (XLVI) Rev. 1, entitled "Resolution on the denuclearisation of Africa". Through that resolution, the Council of Ministers solemnly reaffirmed the objectives of the Declaration on the Denuclearisation of Africa, strongly reaffirmed its conviction that implementation of the Declaration would constitute "an important measure to prevent the proliferation of nuclear weapons and to promote regional as well as international peace and security", expressed grave alarm at Pretoria's possession and continued development of nuclear weapon capability in contravention of the objectives of the 1964 Declaration; called upon all States and the international community as a whole to take the necessary measures to ensure the implementation of the Declaration, and to that end to refrain from collaborating with South Africa in the nuclear field; to consider and respect Africa as a nuclear weapon free zone and to stop uranium purchases from South African sources; and invited OAU member States to submit to the Secretary-General of the organisation their observations on the implementation of the Declaration, "including the drafting of a relevant

convention or treaty". The OAU Secretary-General is yet to report to the Council of Ministers of the organisation on the response of the African States to the invitation to submit their views on this matter.

So much for the actual activity of the African States in pursuit of the objective of establishing a nuclear weapon free zone on the continent. A pertinent issue which can help explain the fortunes of the implementation effort and prospects for the success of this endeavour in the future, and which therefore needs consideration here is why the African States have pursued denuclearisation at all. What were/are their motives? What benefits can accrue to them from denuclearisation or the establishment of a nuclear weapon free zone in Africa today?

Rationale for an African Nuclear Weapon Free Zone

In the first place there are historical reasons why African States have pursued denuclearisation—reasons that are not necessarily coincidental to or co-terminus with objectively adduced reasons for establishing a nuclear weapon free zone in the African context today. The need to stop French nuclear tests in the Sahara is such a historical reason, which is no longer relevant. Other similar reasons are the need to stop colonial Powers from using their former African colonies for nuclear testing and the need to prevent Africa from being drawn into the cold war. It was felt that Africa could be spared bloc rivalry and confrontation ideologically through non-alignment and strategically/militarily through denuclearisation, since nuclear confrontation was definitive of the central strategic balance between East and West. In this context, even the question of combating South African nuclear weapon capability, no matter how urgent and important it is, must also be viewed as a "historical" motive pertaining to a particular era characterised by a particular situation. In the final analysis, this motive must be subsumed under the general motive of combating *all* military nuclear activity on the African continent and elaborating continent-wide mechanisms for peaceful nuclear activities.

While the need to stop French nuclear tests between 1958 and 1966, and the need to combat South African nuclear capability after 1974 have been the most pressing reasons for African States' search for denuclearisation, there are many more permanent reasons that can be cited why African States should establish a nuclear weapon free zone on their continent. One such reason, which the African States themselves have always advanced, is that they would like to contribute to general and complete disarmament not only in order to save Africa, but as

part of an international effort to save all of humanity. Thus in the preamble to the 1964 Declaration, the heads of State and Government declared their consciousness of their responsibilities towards their peoples and their “obligations under the Charter of the United Nations and the Charter of the Organisation of African Unity *to exert every effort to strengthen international peace and security*” [author’s emphasis], and their determination “that conditions conducive to international peace and security should prevail *in order to save mankind from the scourge of nuclear war*”. Likewise, in their resolution entitled “Disarmament and nuclear tests” of August 1963, the Council of Ministers reaffirmed their determination to prevent the storage and dissemination of nuclear arms that threaten the security and prosperity of mankind; welcomed the conclusion of the partial test-ban Treaty at Moscow as a first step towards general and complete disarmament; and expressed the conviction that differences impeding the agreement banning all tests in all environments could be resolved. Thus, even in their own resolutions on denuclearisation, there was a clear, non-parochial dimension to African motivation for denuclearisation. That is the dimension which sustained African interest in the issue even when an intense but ephemeral motive, such as stopping French nuclear testing in the Sahara, waned. At the international level, there can be no question that an African nuclear weapon free zone would help curb the proliferation of nuclear weapons and contribute to international peace and security.

At the level of the African continent and the security of each African State too, there cannot be any doubt as to the benefits that the establishment of a nuclear weapon free zone can bring. Africa is a continent where, with the possible exception of South Africa, no country possesses nuclear weapons. Should any African State acquire nuclear weapons, not only will the entire continent be endangered in that the country so endowed will become a legitimate target of attack with nuclear weapons by extra-continental nuclear Powers, but such a development is also likely to trigger a nuclear-arms race among the African States themselves. Such a development would destabilize the continent not only through the proliferation of crude nuclear devices in it, but also through the socio-economic costs of the diversion of human and material resources on a grand scale away from development projects towards exotic nuclear armament. It is a sustainable proposition that no African State, the possessor included, could gain, or even fail to suffer an erosion in, security from the introduction of nuclear weapons into the African continent.

Through establishing a nuclear weapon free zone on their continent, the African States could also manage to secure negative security guarantees from the nuclear Powers. As is widely known, the nuclear Powers failed to give such guarantees categorically in the context of the non-proliferation Treaty (NPT)—Security Council resolution 255 of 1968 was patently inadequate, since the Powers concerned did not undertake not to attack non-nuclear weapon states with nuclear weapons, but only stated vaguely that, in the event of an attack on a non-nuclear weapon State with nuclear weapons, they would immediately act in accordance with their responsibilities under the United Nations Charter. Given that each of the said nuclear powers has a veto in the Council which would paralyse that body in such a situation, resolution 255 is singularly without value. While the nuclear weapon Powers would not give such guarantees under the terms of the non-proliferation Treaty, they were able to do so within the context of the Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean (Treaty of Tlatelolco). The reasons why the nuclear Powers could not give a blanket guarantee to all non-nuclear weapon states are manifest, and it seems obvious that they would extend such guarantees to African States in the context of an African nuclear weapon free zone treaty.

Another benefit that could accrue to Africa from the establishment of a nuclear weapon free zone concerns the peaceful utilisation of nuclear energy. The 1975 United Nations study on the question of nuclear weapon free zones in all its aspects clearly cites as a benefit from such a measure “the creation of a framework for regional cooperation in the peaceful uses of nuclear energy”. Even now, nuclear energy is playing a vital role in the development of Africa in health, agriculture, hydrology and mining. There is room for expanding the role of this technology both in existing usages and to new fields, such as electricity-generation. Most of the obstacles to such expanded use of nuclear energy would fall away if a regional and/or subregional approach, rather than separate national approaches to the technology, were adopted.

Given these benefits to accrue from the establishment of a nuclear weapon free zone in Africa, it must be asked what the prospects today are for establishing such a zone in Africa. That is the task of the following segment.

Prospects for the Establishment of a Nuclear Weapon free Zone in Africa

It has been said in another context that people move more determinedly to resist a worsening in their circumstances than they

do to better them. The same can be said with regard to the implementation of the Declaration on the Denuclearisation of Africa. African States have been most vocal and combative over a possible deleterious revision of the status quo, such as would occur if foreign countries were to test nuclear weapons in Africa or if South Africa attained a nuclear weapon capability. Their support for the concept of denuclearisation has been most intense when they have been thus faced with the prospect of a dangerous alteration in their current circumstances. They have not, however, been equally zealous in promoting denuclearisation *per se*. Thus, it could be said that their approach to denuclearisation or the establishment of a nuclear weapon free zone in Africa has been essentially negative, their actions motivated not by what they wanted to see happen in Africa, but rather by what they did not want to see happen.

Several reasons can be adduced to explain why this has been so. In the first place, Africa has been a region characterised by the absence of nuclear weapons, which means that for the main part it was action, rather than the lack of it, that could spell danger. In other words, if everyone just left the situation as it was, Africa would remain quite safe and free of nuclear weapons.

The trouble with this approach, of course, was that not everybody was prepared to leave the situation as it was. To counter this unhealthy development, the African States were prepared to adopt the brush-fire approach, putting out their fire where they found it: combating French nuclear tests in the Sahara when they threatened continental tranquillity and doing the same for South African nuclear capability in its turn. This approach was also reinforced by General Assembly resolution 1652 (XVI) of 1961, whereby the world body called upon all States "to consider and respect the continent of Africa as a denuclearised zone". Given this pronouncement by the international community, it did appear that Africa could be saved by just having all States abide by this injunction, and that the role of the African States could be confined to ensuring that all States in fact did so.

Then there was also the question of African States' adherence to the non-proliferation Treaty of 1968. The majority of African States, including all the potential nuclear States (except South Africa until July 1991), are parties to that Treaty. Even the reason of the mainly southern African States that for some time resisted joining the Treaty was not nuclear ambition, but the desire to protest Western nuclear collaboration with South Africa. Thus there was no immediate threat

of a nuclear-arms race on the continent, which, if there had been, might have acted as a spur to greater efforts towards denuclearisation.

It can therefore be said that the denuclearisation of Africa, besides being obstructed by the possibility of South African nuclear capability, has been the victim of a perception that the goal is without any urgency. As already pointed out, most of the States of the region are quite far from developing nuclear capability. Moreover, most of them—and practically all which matter—have either already promised, or are about to promise, not to acquire nuclear weapons by joining the non-proliferation Treaty, and, as for the activities of other States on the continent, the United Nations has repeatedly asked all States to consider and respect the continent of Africa as a nuclear weapon free zone.

Yet, even with all this paraphernalia in place, it is still essential that a proper nuclear weapon free zone be established in Africa through an internationally binding instrument whereby the obligations of zonal and extra-zonal States would be clearly defined, the extent of the zone clearly defined, and terms used in the agreement (treaty or convention) also clearly defined. Its importance notwithstanding, resolution 1652 (XVI) of 1961 is still a mere recommendation by the General Assembly, not a treaty obligation contracted by States Members of the United Nations. The same goes for all other pronouncements by the United Nations General Assembly on the issue. Although for the NPT, being a treaty, entails contractual obligations, not all African States are parties to it. Even if they were, the Treaty does not prevent the stationing of nuclear weapons in the territories of its parties. The example of Soviet nuclear deployment in Eastern European countries parties and of United States nuclear deployment in Western European countries parties is ample proof that the NPT is consistent with the presence of nuclear weapons on the territory of States parties to it. A nuclear weapon free zone, on the other hand, implies a regime of *total absence* of nuclear weapons in the territories of States parties to it. One can envisage, in the context of an NPT-type agreement, a situation where African States could have the nuclear weapons of outside Powers situated on their territories. Once this happened, which would be quite consistent with the NPT, not only would such African States themselves become legitimate targets of nuclear attack, but a “deployment race” in Africa could also be precipitated, as various outside States are invited to deploy in rival States, thus negating all meaning from the fact that the African States would term themselves “non-nuclear weapon states”.

A nuclear weapon free zone in Africa is therefore a qualitative improvement, not only on the status quo, but also on the NPT. Quite

apart from the fact that such a zonal arrangement could meet the approval of zonal States that have not joined the NPT because they feel it is an “unequal” treaty (as in the case of Brazil, Argentina and Chile with regard to Tlatelolco), it would also effectively put the zone outside the ambit of nuclear competition and attract for it negative and even positive security guarantees.

African States have, with the exception of South Africa, always stated that they were prepared to establish a nuclear weapon free zone in Africa. The only reason they quote as disabling has been South African nuclearisation. Now South Africa has joined the NPT, which means that it is willing to enter the halfway house of refraining from becoming a nuclear Power. Is the denuclearisation of Africa therefore nearer?

One certainly hopes so, but alas, the situation is not quite so simple. Africa may be a compact and easily defined geographical unit, but its security relations are not. The situation in the Middle East quickly comes to mind. Given the Israeli-Arab conflict, the Middle East, comprising countries in north Africa and those in Arabia and Palestine, looks even more of a security unit than Africa as such. Thus it is unrealistic to ask the Libyan Arab Jamahiriya, Egypt, Algeria and Morocco to tie their nuclear plans to what happens in Madagascar and Pretoria and not to what happens in Tel Aviv, Damascus and Teheran. It was partly for this reason that William Epstein, in his monograph on the subject in 1977, expressed the view that if Africa wanted to establish a nuclear weapon free zone in the near future, a country such as Egypt might have to be left out, perhaps to join later.

Most of the north African countries (including Egypt) have now joined the NPT, and Egypt and the Islamic Republic of Iran have also been prime movers for a nuclear weapon free zone in the Middle East. Progress in that area is being stalled by Israeli insistence that it must negotiate directly with its neighbours about such a zone (which would imply its recognition by all of them) rather than be asked merely to respond to studies and recommendations of the United Nations and its Secretary-General. Whatever happens in that sphere, there can be no question that progress on the Middle Eastern nuclear weapon free zone will greatly facilitate progress on an African nuclear weapon free zone.

An associated point is that part of the reason for the non-realisation of an African nuclear weapon free zone has been the fixation of African States on a continent-wide nuclear weapon free zone. There is absolutely

no reason why this should be an immutable rule. As already explained above, security relationships among the countries involved do not conform to the continental geographical map. Some subregions form more self-contained security units than others. If such areas were to form subregional nuclear weapon free zones, this would not only serve their own immediate security interests, but might even enhance the prospect of a continent-wide nuclear weapon free zone. The international community has given its blessing to the establishment of such subregional nuclear weapon free zones. In the 1975 United Nations study already mentioned, the experts were agreed that "obligations relating to the establishment of nuclear weapon free zones may be assumed not only by groups of States, including entire continents or large geographical regions, but also by smaller groups of States and even individual countries". Perhaps it was with these twin facts in mind—that there are subregional security units and that the international community endorses the formation of nuclear weapon free zones at that level—that some writers have begun to argue for nuclear weapon free zones that do not cover the entire African continent. Writing *in Le Mauricien* on 1 July 1990, for example, the Secretary-General of the Mauritian Militant Movement, Paul Berenger, proposed the establishment of a South-West Indian Ocean and Southern African Nuclear Free Zone Treaty. Such a treaty, to include States of the Indian Ocean Commission (Mauritius, Madagascar, Seychelles and Comoros), South Africa, and South Africa's immediate neighbours (Lesotho, Swaziland, Botswana, Mozambique, Namibia and Zimbabwe), is commended primarily because it has become *possible*, given that most of the frontline States—Mozambique, United Republic of Tanzania, Zambia and Zimbabwe—and South Africa have acceded to the non-proliferation Treaty.

The proposal by Mauritius is still mainly that: a proposal. However, it shows that many thoughtful people are still giving, consideration to the denuclearisation of Africa. The 1964 Declaration on the Denuclearisation of Africa is still with us, but the main guidance it imparts to us is the goal we must pursue. With regard to the means, it is incumbent upon us to choose those what will enable us to make the greatest progress in our given circumstances.

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THE AFRICAN NUCLEAR WEAPON FREE ZONE TREATY: THE PELINDABA TEXT AND ITS PROVISIONS

At its sixty-second ordinary session in Addis Ababa, held from 21 to 23 June 1995, the Council of Ministers of the Organisation of African Unity (OAU) adopted resolution CM/Res. 1592 (LXII)/Rev. 1 on the implementation of the Treaty declaring Africa a nuclear weapon free zone. In that resolution, the Council took note of and endorsed the draft Pelindaba Treaty on the African nuclear weapon free zone, which had been submitted to it by the Group of Experts charged with drafting it and had been amended by the Council after discussion. The Council then decided to submit the amended draft text to the OAU heads of State and Government at their thirty-first ordinary session, held from 26 to 28 June. The heads of State, in turn, approved the Council's resolution, thereby endorsing the draft text. In so doing they also approved the offer of the Egyptian Government to host the signing ceremony for the Treaty. It can be said, therefore, that the long journey to a legally binding instrument on an African nuclear weapon free zone, which began in 1964 with the Declaration on the Denuclearisation of Africa, has virtually come to an end. With the approval of the draft by the OAU summit, what is left is the formal aspect of signature and ratification, to be followed by implementation once the Treaty comes into force.

Background

The first Summit Conference of the Organisation of African Unity, held in Cairo in July 1964, adopted a concerted African reaction to French atomic testing in the Sahara, an event that had drawn very strong protests from some African countries. In its Declaration on the Denuclearisation of Africa, the African heads of State called upon all

States to respect the continent of Africa as a nuclear weapon free zone. The heads of State pledged to undertake a legally binding commitment for the nuclear weapon free status of the continent. The delay in implementing the Cairo Declaration was due to a number of factors, chief among which were the unbridled global nuclear-arms race and the suspicion of African States that South Africa under the apartheid Government was developing a nuclear weapon capability. Given this perception of threat to the security of African States, it became difficult to obtain a consensus on a legally binding instrument for an African nuclear weapon free zone. Indeed, rather than proceed along the lines adopted by the Latin Americans in 1967 in the Treaty of Tlatelolco, several groups and individuals in Africa argued that some African countries should develop nuclear weapon capabilities to serve as a counterpoise to the capability being developed by South Africa. In those circumstances, the focus of the annual resolution submitted by African countries to the United Nations General Assembly on the subject was South Africa's nuclear weapon capability.

The dramatic changes that occurred in international relations in the second half of the 1980s had a salutary effect on the implementation of the Declaration on the Denuclearisation of Africa. Of particular relevance in this respect was the commitment of the Government of South Africa to dismantle the apartheid system and its decision to adhere to the Nuclear Non-Proliferation Treaty. In the light of these developments, a Group of Experts, convened in Addis Ababa in May 1991 to consider the elements for the preparation of a treaty on an African nuclear weapon free zone, concluded unanimously that the time was auspicious to commence drafting. At its second meeting, held in Lome" in 1992, the Group of Experts completed the examination of all the elements that should form part of the treaty and recommended that work should commence on drafting. That task was begun in April 1993 in Harare by a Group of Experts jointly designated by the OAU and the United Nations. At its fourth drafting session, in Johannesburg, in May/June 1995, the Group completed its work on the draft Pelindaba Treaty, which it submitted to the OAU Council of Ministers.

An important consideration in the elements for drafting a nuclear weapon free zone treaty for Africa was the ambiguous nuclear position of South Africa. Although suspected of having a nuclear weapon capability, it had not declared itself to be nuclear weapon capable, and there was no consensus on its status. That situation changed about two weeks before the expert group commenced the drafting of the treaty. In March 1993, President de Klerk informed the South African

Parliament that South Africa not only had developed a nuclear weapon capability, but also had produced six nuclear weapons. That confirmation did imply that the treaty to be drafted would vary significantly from the existing nuclear free zone Treaties, since, unlike the situation in the other zones, there existed in Africa a nuclear weapon-capable State. The treaty had to be formulated to ensure not only that no zonal State would, in the future, develop nuclear weapons, but also that those already developed by South Africa would be totally destroyed, together with the facilities for their production. Another important element that would distinguish the African treaty concerned the question of peaceful uses of nuclear energy. African States were determined to ensure that, in addition to its non-proliferation aspects, the treaty would fit in with Africa's multifaceted effort to strengthen its security, stability and development. Thus, it should not only provide a legally binding renunciation of a nuclear-arms race, but also create an enabling environment of mutual trust and cooperation in the peaceful uses of nuclear energy and nuclear technology for economic and social development.

Treaty Provisions

It should be pointed out at the outset that though the African Nuclear Weapon free Zone Treaty seeks to strike a balance between non-proliferation and the encouragement of cooperation in the peaceful uses of nuclear energy, both aspects are governed by strict safeguards provisions. The non-proliferation provisions are all-embracing, covering, in articles 3, 4, 5, and 6, aspects of renunciation of nuclear explosive devices, prevention of stationing, prohibition of testing and, in the case of a party that had developed nuclear weapon capability before entry into force, declaration, dismantling and destruction. Indeed, in order to avoid any loophole, and taking into account the evolution of international opinion on the issue of peaceful nuclear explosions, the non-proliferation provisions cover not just nuclear weapons, but the wider term "nuclear explosive devices". In article 1, dealing with the definition and usage of terms, "nuclear explosive device" is defined as any nuclear weapon or other explosive device capable of releasing nuclear energy, irrespective of the purpose for which it could be used.

The renunciation of nuclear explosive devices (article 3) is all-encompassing, covering every aspect from research (a unique feature that does not occur in any other nuclear weapon free zone Treaty), to development, manufacture, stockpiling or control. Thus each party commits itself in this article not to undertake those activities by itself,

nor to seek nor receive any assistance, nor to assist nor encourage others in undertaking them.

Article 4, which prevents the stationing of nuclear explosive devices in the territories of parties, gave rise to exhaustive discussions. While there was no controversy over requiring each party to undertake to prohibit in its territory the stationing of any nuclear explosive device, the issue of whether such a party could allow foreign ships or aircraft that might be suspected of carrying nuclear explosive devices to visit its ports or airfields generated considerable debate among the experts. Such permission in the exercise of a party's sovereign rights forms part of the Treaty of Rarotonga. There was insistence, therefore, on the part of some nuclear weapon states, that such permission should also feature in the African Treaty. Article 4, paragraph 2, grants permission to each party to decide for itself whether to allow such visits, but the exercise of the right should be without prejudice to the purposes and objectives of the Treaty.

Article 5 prohibits the testing of any nuclear explosive device by a State party or in the territory of a State party. It also forbids a State party from assisting or encouraging the testing of any nuclear explosive device by any State anywhere. If this article is read in conjunction with the definition of nuclear explosive device in article 1, it becomes clear that the so-called peaceful nuclear explosion is prohibited. This is in consonance with the determination of African States not to leave any loophole for the testing of a nuclear weapon under the guise of a peaceful nuclear explosion.

The provisions in article 6 on declaration, dismantling, destruction or conversion of nuclear explosive devices are unique to the African Nuclear Weapon free Zone Treaty. Africa had to take into account the statement by President de Klerk that the country had in fact produced some nuclear weapons. Though the President indicated that the weapons programme had been discontinued, and though the International Atomic Energy Agency (IAEA) certified that South Africa had indeed destroyed the weapons, parties have to be assured by appropriate provisions in the Treaty. Thus the article requires each party to declare any capability for the manufacture of nuclear explosive devices, to dismantle and destroy any nuclear explosive device that it has manufactured prior to the coming into force of the Treaty, and to destroy the facilities for production. Each party is also obliged to permit IAEA and the African Commission on Nuclear Energy (established under the terms of article 12 of the Treaty) to verify the processes of dismantling and destruction

of nuclear explosive devices as well as the destruction and conversion of the facilities for their production.

The prevention of the dumping of radioactive wastes in Africa is seen as an important element in the construction of the African nuclear weapon free zone. In the aftermath of the outrage provoked by the dumping of hazardous wastes in some African countries, the Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa was concluded. It was considered appropriate, therefore, that parties to the African nuclear weapon free zone Treaty (article 7) should undertake to effectively implement or at least use as guidelines the measures contained in the Bamako Convention, in so far as it pertains to radioactive wastes.

Peaceful Uses of Nuclear Technology

In accordance with Africa's desire to take advantage of the peaceful uses of nuclear energy, article 8 is devoted to that end. It should be pointed out that the title of the Treaty, "African Nuclear Weapon free Zone Treaty" was preferred over the South Pacific example, namely, the South Pacific Nuclear Free Zone Treaty. This was to underscore the fact that the intention was to prevent the introduction of nuclear weapons into the zone, but not to forbid nuclear technology as such. Article 8, paragraph 1, therefore, makes clear that nothing in the Treaty should be interpreted as to prevent the use of nuclear science and technology for peaceful purposes. To that end, parties undertake in article 8, paragraph 2, to promote individually and collectively the use of nuclear science and technology for economic and social development. They also undertake to establish and strengthen mechanisms for cooperation at the bilateral, subregional and regional levels. Article 8, paragraph 3, encourages parties to make use of the programme of assistance available in IAEA.

Verification of Peaceful uses

In spite of its emphasis on promoting the peaceful uses of nuclear energy, however, the Treaty ensures that peaceful nuclear activities are to be conducted under strict safeguards arrangements. Each party therefore undertakes in article 9 to conclude a comprehensive safeguards agreement with IAEA. Furthermore, each party undertakes not to provide source or special fissionable material or equipment to any non-nuclear weapon State unless subject to a comprehensive safeguards agreement concluded with IAEA. This is to ensure that even in their commercial

activities in the nuclear field, parties to the African Nuclear Weapon free Zone Treaty are conscious of their responsibilities to contribute to the strengthening of the global non-proliferation regime.

To strengthen confidence in the peaceful uses of nuclear technology, provision is made in article 10 for the maintenance by parties of the highest standards of security and effective physical protection of nuclear materials, equipment and facilities to prevent theft or unauthorised use and handling.

Article 11 on the prohibition of armed attack on nuclear installations within the zone is unique to the African Nuclear Weapon free Zone Treaty. It is intended to reassure parties that other parties will neither launch such an attack nor assist others in doing so.

Mechanism for Compliance

The Treaty establishes the African Commission on Nuclear Energy for the purpose of ensuring compliance with its provisions. Elected by the Conference of Parties, the Commission shall be responsible for the operation of the Treaty. It shall receive and collate the reports that parties are obliged to submit annually on their nuclear activities; it shall implement the complaints and dispute settlements procedure as elaborated in annex IV of the Treaty; it shall review the application of IAEA safeguards to peaceful nuclear activities, as elaborated in annex II; and it shall promote and encourage subregional, regional, and international cooperation for the peaceful uses of nuclear technology within the zone.

The highest body created by the Treaty is the Conference of Parties. However, its functions are mainly to elect members of the Commission, to adopt the Commission's budget, and, occasionally, to convene in extraordinary session to receive and deliberate on the Commission's findings regarding complaints against a party.

Final Provisions

Perhaps of the greatest interest among the final provisions of the Treaty is article 18 on signature, ratification and entry into force. It is envisaged that the Treaty will come into force on the deposit of the twenty-eighth instrument of ratification, that is, on the deposit of the instrument of ratification of a simple majority of members of OAU.

Zone of Application

Annex 1 of the Treaty contains the map indicating the zone of application of the Treaty, to which reference is made in article 2. The

negotiation of both the wording of article 2 and of the nature of the map in annex 1 was a very laborious task because of the many disputed territories within the zone. The extra-zonal Powers that are in disagreement with African States also happen, in the most important cases, to be nuclear weapon states whose support for the Protocols to the Treaty is crucial for its effectiveness. The expert group that drafted the Treaty held consultations with the extra-zonal States concerned and was able in most cases to arrive at an understanding. However, one major issue remained unresolved within the formula agreed upon.

In the light of the special peculiarities of the African zone, it was not considered feasible to describe the zone in longitudinal and latitudinal terms. Rather, the illustrative map in annex I shows all the States which, by the decisions of OAU, appertain to Africa, with the understanding that inclusion in the map is without prejudice to the issue of sovereignty. An exception to the general understanding relates to the Chagos Archipelago, which, in the view of the United Kingdom, should not be reflected as being part of the zone. For Africa, however, the Chagos Archipelago is part of the territory of Mauritius, whose claim has been endorsed by OAU.

Protocols

The Treaty has three Protocols. Protocol I deals with security assurances, whereby the nuclear weapon states undertake not to use or threaten to use nuclear weapons against any party to the Treaty or against any territory within the zone. Protocol II, addressed, like Protocol I, to the nuclear weapon states, prohibits them from testing or assisting in the testing of nuclear explosive devices anywhere within the zone. Protocol III, addressed to extra-zonal States with territories in the zone, calls upon them to apply the provisions of the Treaty to such territories.

Significance of the Treaty for African Security and Cooperation

From the early years of their emergence into independence in the 1960s, African States have perceived nuclear weapons as one of the major security threats to the region. At first, it was French nuclear testing in the Sahara desert that aroused African consciousness of the nuclear issue. So strong was the feeling against the tests that not only was the issue raised in the United Nations, but unilateral action against France—including a break of diplomatic relations—was taken by some States. The formation of OAU in 1963 gave the opportunity for a Pan African joint response. This took the form of the Declaration on the Denuclearisation of Africa, adopted by the OAU summit in Cairo in

1964. Though intended primarily to prevent outside Powers from introducing nuclear weapons in any form into Africa, that Declaration also contained an undertaking by African States to avert a nuclear-arms race among themselves and therefore to avert the danger that such a race would pose to continental security. Later on, the development of a South African nuclear programme, which was widely suspected of being aimed at a nuclear weapon capability in defence of the universally condemned policy of apartheid, posed a major challenge to continental security.

Though many in the continent advocated the conclusion of the instrument envisaged in the 1964 Declaration as a response to the South African challenge, others believed that such a course would further endanger Africa since there could be no guarantee that South Africa would become a party to such an agreement. Besides, it could not be presumed that the nuclear weapon states that should be the guarantors of the security of African States against nuclear attack by South Africa would do so. Thus, rather than undertake the elaboration of a nuclear weapon free zone treaty, Africa focused on calling the attention of the international community to the danger to African security posed by the South African nuclear programme. At the same time, many in Africa advocated the development of similar programmes by at least a few African States that were considered to be in a position to do so. Obviously, the resulting nuclear-arms race would not have enhanced African security.

The 1995 African nuclear weapon free zone treaty was the first major cooperative undertaking between post-apartheid South Africa and the rest of the continent. South Africa began to participate in its elaboration in 1993, and it is significant that the final draft was completed in Johannesburg. Thus the Treaty has removed a major security threat in Africa by introducing transparency and confidence among the States in the region. The promotion of peaceful uses of nuclear science and technology, envisaged through the implementation of the Treaty, will further enhance cooperation among African States. Significantly, South Africa, which is the most advanced State in the region in nuclear technology, has not only pledged its total commitment to regional cooperation in this field, but has offered to host the headquarters of the African Commission for Nuclear Energy. It is believed that once the Treaty enters into force, the Commission will begin to fulfil one of its mandates, namely, to promote inter-African cooperation in the

peaceful uses of nuclear technology for economic and social development.

The African Nuclear Weapon free Zone and the Global Non-Proliferation Regime

The establishment of nuclear weapon free zones is an important element in an effective global non-proliferation regime. The creation of such zones is to be encouraged with a view to the realisation, together with nuclear disarmament, of a nuclear weapon free world. The African nuclear weapon free zone, like the two other zones already created in Latin America and the Caribbean and in the South Pacific, can only be fully effective if the nuclear weapon states are committed to fulfilling the obligations expected of them in the relevant Protocols to the Treaty. Their willingness to give security assurances and to refrain from testing nuclear weapons in the zone is indispensable for the viability of each of the zones. Even before the conclusion of a comprehensive nuclear-test-ban treaty, nuclear weapon states should exercise self-restraint and desist from violating the commitment of regional States to make their region nuclear weapon free.

HISTORY OF THE EFFORTS TO ESTABLISH AN AFRICAN NUCLEAR WEAPON FREE ZONE

The African Nuclear Weapon free Zone (NWFZ) embraces an entire inhabited continent, comprising 53 sovereign States. It will be the third such zone to be established in a densely populated area of the world. The two existing zones covering populated areas encompass Latin America and the Caribbean (1967 Treaty of Tlatelolco) and the South Pacific (1986 Treaty of Rarotonga).

The formal title of the Treaty establishing the African NWFZ, as described in its statute, is the "African Nuclear Weapon free Zone Treaty". The African States chose this title to underscore the fact that it is a treaty for the military denuclearisation of Africa. This allows the African States to benefit from the application of nuclear technology for peaceful purposes of economic and social development. The Treaty will be referred to as the "Treaty of Pelindaba", using the name of the area near Pretoria, which is the headquarters of South Africa's Atomic Energy Corporation, and where the joint United Nations/Organisation of African Unity (OAU) Group of Experts finalised the draft of the Treaty on 2 June 1995. According to Ambassador J. S. Selebi, South Africa's Permanent Representative to the United Nations Office at

Geneva, “Pelindaba”, roughly translated, means “the discussion has been completed”.

Declaration on the Denuclearisation of Africa

The discussions that ended in Pelindaba actually began in 1960 when, confronted with French nuclear testing in the Sahara, several African States launched an effort to denuclearize Africa. That year marked the true beginning of the genesis of the proposal to establish an African NWFZ. One year later, at the initiative of African States, the first resolution of the United Nations General Assembly on the establishment of a nuclear weapon free zone was approved under resolution 1652 (XVI) of 24 November 1961, entitled “Consideration of Africa as a denuclearised zone”. In that resolution, the Assembly called on Member States to refrain from carrying out any nuclear tests in Africa, and from using the continent to test, store, or transport nuclear weapons.

Nearly three years later, the first African regional document, the direct forerunner of the Treaty of Pelindaba, the “Declaration on the Denuclearisation of Africa”, was adopted by the OAU in July 1964. By that Declaration, the participating African heads of State and Government solemnly declared that they were ready to undertake “through an international agreement to be concluded under United Nations auspices, not to manufacture or control atomic weapons”, and requested the General Assembly to take “the necessary measures to convene an international conference for the purpose of concluding an agreement to that effect”.

The Assembly, however, did not convene an international conference as requested by the OAU Declaration. Nevertheless, in resolution 2033 (XX) of 3 December 1965, it endorsed the Declaration and expressed the hope that African States themselves would initiate studies, and take the necessary measures through the OAU to implement it. In that same resolution, the Assembly also requested the United Nations Secretary-General to extend to the OAU the facilities and assistance that it might require to achieve the aims of the resolution. The African States, for their part, did not plan the strategy that would have been necessary to capitalize on the historic OAU Declaration and on resolution 2033 (XX). Annually from 1974 until 1990, the Assembly continued to adopt resolutions (sponsored by the African States) whose focus shifted from concluding a treaty on an African NWFZ to matters considered to be obstacles to its achievement.

Those obstacles related mainly to different aspects of the policies of the Government of South Africa:

- South Africa refused to sign the Nuclear Non-Proliferation Treaty (NPT) and conclude adequate safeguards agreement with the International Atomic Energy Agency (IAEA).
- Regional and international anxieties were mounting about South Africa's growing nuclear weapons development and capability. That, in fact, prompted the Assembly to adopt resolution 34/76 B of 11 December 1979, which mandated a Group of Experts from France, Nigeria, the Philippines, the Soviet Union, Sweden, and Venezuela, to prepare a study entitled "South Africa's plan and capability in the nuclear field". Another study, entitled "South Africa's nuclear-tipped ballistic missile capability", was released by the United Nations in 1990, on the basis of Assembly resolution 44/113 B of 15 December 1989. Both United Nations studies provided a comprehensive analysis of the capacity of South Africa in the nuclear and ballistic missile fields.
- Two reported incidents heightened African States' concerns about South Africa's nuclear intentions. The first incident was disclosed by the former Soviet Union through the discovery of a nuclear weapons underground test site in the Kalahari Desert in 1977. The second incident involved an explosion thought to be a South African nuclear detonation detected by an American Vela satellite. Investigations of those two reported incidents remained inconclusive.
- South Africa continued its military incursions into territories of the front-line and neighbouring States.
- South Africa continued its apartheid policies in the face of universal condemnation.

As a result, no preparatory steps or consultations among the States of the region for drawing up a draft treaty on the denuclearisation of Africa were carried out. That was in sharp contrast to the steps taken by the Latin American and Caribbean States in creating the Treaty of Tlatelolco. The African NWFZ and the Latin American NWFZ initiatives originated almost at the same time (the idea for the Latin American zone was stimulated in 1962 by the Cuban missile crisis). They both followed parallel courses until 1965. The Latin American initiative gained a considerable lead after that, owing to the decision of the Latin American States in November 1964 to set up an ad hoc body—the Preparatory

Commission for the Denuclearisation of Latin America— with the exclusive task of drawing up the required draft treaty. The Commission finished its work in two years and the Treaty of Tlatelolco was opened for signature in 1967. In the African context, no concrete steps were taken until 1990, when, as a result of the dramatic changes that took place in the international and regional scenes, it was felt that the time was ripe for African States to pursue in a concrete manner the denuclearisation of their continent.

The first significant change was the political confidence built in the nuclear field by South Africa's accession to the NPT, its quick acceptance of IAEA safeguards, the disclosure by former President de Klerk of the existence and destruction of six nuclear explosive devices, and the subsequent verification by IAEA that they no longer existed. Those concrete actions taken in the nuclear field by South Africa meant that a vital precondition for the military denuclearisation of Africa had been fulfilled. Other significant changes related to Africa's own "Peace Process", including South Africa's successful peace process with the front-line and neighbouring States, the improved political situation in South Africa through the abolition of the apartheid system and the holding of democratic elections leading to the installation of the South African Government of National Unity. Those developments greatly changed the threat perception of the African States and their general attitude towards the establishment of an African NWFZ.

Establishment of the Group of Experts

In 1990, the African States at the United Nations in New York met in a strategy session on how to transform the OAU 1964 Declaration into treaty format. Following that, a draft resolution sponsored by the African States was approved by the General Assembly as resolution 45/56 A on 4 December 1990. That resolution adopted a measure, which was later to prove decisive for the success of the African NWFZ idea— the creation of a group of experts specifically instructed "to examine the modalities and elements for the preparation and implementation of a convention or treaty on the denuclearisation of Africa". The mandate of the group was later expanded in 1992 (resolution 47/76 of 15 December 1992) to include "drawing up a draft treaty or convention on the denuclearisation of Africa".

As mandated, a Group of Experts was constituted in 1991, composed of experts from the various subregions of Africa, the OAU, the United Nations, and IAEA. Representatives of the Treaty of Rarotonga and

the Treaty of Tlatelolco were invited to participate as observers in the work of the Group so that Africa could benefit from the experience gained by the existing nuclear weapon free zones. Representatives of the five nuclear weapon states and Spain and Portugal were invited to special meetings of the Group. The special meetings provided an opportunity to ascertain the views of extra-regional States regarding the Protocols to the Treaty of Pelindaba, which are addressed to them.

The Group of Experts held a total of six meetings between 1991 and 1995, the last of which took place five years after its creation, in Johannesburg/Pelindaba, from 29 May to 2 June 1995. The Pelindaba text of the African NWFZ Treaty, as adopted by the Group of Experts, was submitted to the OAU Council of Ministers at its sixty-second ordinary session, held at Addis Ababa from 21 to 23 June 1995. After considering the Pelindaba text, the OAU Council of Ministers made some amendments and thereafter adopted resolution OAU/CM/RES 1592 (LXII)/Rev. 1. The Pelindaba text, as amended, was then approved by the thirty-first ordinary session of the OAU Assembly of Heads of State. The Treaty will be opened for signature in Cairo in February 1996. The Treaty will establish the African Commission on Nuclear Energy—AFCONE—to supervise the implementation of the Treaty, with headquarters in South Africa.

Looking back on the work of the experts who prepared the Treaty, it can be said that they came to the negotiating sessions well-prepared to discuss the issues and formulate the text of the long-awaited Treaty of Pelindaba. The extensive exchange of ideas and information during the sessions have been characterised by maximum openness and an atmosphere of cooperation. Perhaps the most striking impression during the five years of negotiations was the sense of change. There was an acceptance that perceptions from the past should be abandoned, both on regional and global levels, and that the new and challenging task for Africa was to try to deal constructively and cooperatively with a new environment in the post-cold war era.

Disarmament and Development Benefits of the African NWFZ

Essentially, the African NWFZ Treaty will fulfil the function of preventing a nuclear-arms race on the continent; it will prevent African and extraregional States from introducing nuclear explosive devices into Africa; it will prevent the danger of atomic radiation. In addition to its non-proliferation, disarmament, verification, and environmental protection functions, the Treaty will promote African cooperation in

the various uses of nuclear technology for economic and social development. Thus, the Treaty will represent an important contribution to a holistic approach to African security.

The Treaty of Pelindaba is an African success story even if it has taken 31 years to give birth to it. The Treaty represents some of the best news coming out of an Africa that continues to suffer its share of the tragic and destructive effects of conflict. Undoubtedly, the realisation of an African NWFZ will be a most welcome way to commemorate fifty years of the United Nations.

By drafting the Pelindaba Treaty under "United Nations auspices", the OAU was in fact satisfying the spirit of an element contained in the 1964 OAU Declaration. The preparation of the Treaty has shown the crucial and vital role that the United Nations can play, such as in the efficient organisation of the six meetings of the Group of Experts (in Addis Adaba, Lome', Harare, Windhoek and Johannesburg/Pelindaba), in providing expert advice to the Group in the course of drafting the Treaty, and in encouraging and attaining the desired goal of non-proliferation through a multitude of General Assembly resolutions. In addition, all six meetings of the Group of Experts have been financed through the regular budget of the United Nations. The United Nations Member States should be congratulated for strongly supporting such a profitable investment in regional peace and security. The ability of the United Nations to extend assistance if requested by other regions or subregions in similar circumstances has been amply demonstrated. The preparation of the Treaty has also highlighted the long-standing and mutually-beneficial cooperation between the United Nations, the OAU and IAEA in promoting the goals of non-proliferation.

The political importance that the international community attaches to the African NWFZ was manifest during the General Assembly's fiftieth session. In resolution 50/78 of 12 December 1995, the Assembly welcomed the Treaty of Pelindaba "with special satisfaction" and declared that it considered it "an event of historic significance in the efforts to prevent the proliferation of nuclear weapons and to promote international peace and security". Such political weight was also evident during the sessions of the 1995 NPT Review and Extension Conference, where a large number of States made comments supporting the Treaty.

Notwithstanding the different characteristics of each region, the African NWFZ can serve, in many respects, as an example rich in inspiration to other regions, including the Middle East. It can provide vital lessons for all States wishing to contribute to broadening the

areas of the world from which nuclear weapons will be forever proscribed.

DENUCLEARISATION: ENHANCING AFRICAN REGIONAL COOPERATION IN PEACEFUL NUCLEAR APPLICATIONS

In the period marking the 50 years of the United Nations, the immediately following the indefinite extension of the Nuclear Non-Proliferation Treaty (NPT), a review of the issue of safeguards and peaceful uses a nuclear energy in Africa seems appropriate. Africa has neither recorded a Chernobyl-type nuclear accident, nor even a Goiania-type radiological incident as in Brazil; and no African country has been found in gross violation of its safeguards agreements. However, much scientific interest was generated by the unique discovery in the 1970s that a nuclear chain reaction had taken place naturally several milleniums ago at Okolo uranium deposit in Gabon. Further, a continent-wide outcry arose in 1987 at the rumour of radioactive waste dumping at Koko Port in Nigeria, which turned out to be toxic industrial waste. And Africa made international headline news in the area of nuclear energy on the accession of South Africa to the NPT, and the subsequent revelation of its former nuclear weapons programme. Now in 1995, with South Africa firmly back in the "family-fold" of African nations, and with the achievement of the long-awaited African Nuclear Weapon free Zone Treaty, Africa can happily join in celebrating 50 years of the existence of the United Nations and 50 years since the dawn of the development of the peaceful uses of the atom.

Safeguards and Peaceful Uses

Fifty years of the atomic age and the world's experience of the various uses of nuclear energy have convinced most nations that safeguards and peaceful uses of nuclear energy must go hand in hand. The current large number of parties to the NPT (182) and its recent indefinite extension bear eloquent testimony to this conviction. As the primary purpose of safeguards is to limit the number of States that possess nuclear weapons, the present small number of five nuclear weapon states (NWS) and the three that are presumed to be nuclear weapon states indicate that the concept of international safeguards has worked well and is contributing to the quest by humanity for a safer world.

The need to associate safeguards with peaceful application of nuclear energy is based on the fact that the same technology required for peaceful uses of nuclear energy is closely coupled to that required for

the production of nuclear weapons. Furthermore, the technologically advanced countries, which were the first to develop nuclear technology, could not continue indefinitely to deny this technology to other countries that also wished to benefit from its peaceful applications. It was therefore prudent to put in place some legal and institutional arrangements to ensure that any assistance, materials or facilities provided to other nations for the development and peaceful applications of nuclear energy were not diverted to the production of nuclear weapons. Initially, this type of control was exercised through the bilateral agreements between the supplier and recipient States, and this mode of control continued until an international organisation was specifically set up for that purpose.

The creation of the International Atomic Energy Agency (IAEA) in 1957 marked the first concrete step taken internationally to curb the spread of nuclear weapons by empowering the Agency to put in place an internationally administered safeguards system. Article II of the Statute of the Agency specified the task of IAEA as, “to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world. It shall ensure so far as it is able, that assistance provided by it or at its request or under its supervision or control is not used in such a way as to further any military purpose”.

The scope of applicability of the safeguards foreseen in the IAEA Statute appeared limited, as several industrialised nations were in the position to develop and operate nuclear facilities without outside assistance, and so were not obliged to place their facilities under IAEA safeguards. By the time the IAEA safeguards system was established and operating, two more States (France and China) had become nuclear weapon states, and many more States seemed poised to follow the path to nuclear weapons programmes. The negotiation and entry into force of the NPT by 1970 greatly increased the scope of applicability of international safeguards by IAEA. The NPT not only enabled many more States to accept safeguards on their peaceful nuclear activities, but also it meant that no nuclear material or facilities in any non-nuclear weapon State party to the Treaty could legitimately be left outside the ambit of the IAEA safeguards. Furthermore, in the mid-1970s, when countries were investing heavily in adding nuclear power to their energy mix, and several States in Europe and Asia with large and sophisticated nuclear fuel cycles came under the comprehensive safeguards of the Agency, the coming into force of the NPT greatly increased the safeguards implementation workload of IAEA.

IAEA Safeguards in Africa

Unlike the experience in some other parts of the world, the application of IAEA safeguards in Africa has never been an issue of major concern to the world community. In fact, not until the recent accession of South Africa to the NPT in 1991 was there any excitement, albeit a pleasant one, with regard to safeguards implementation in Africa.

The dawn of the nuclear age found many African countries still under colonial rule. Of the few independent African States, only one (South Africa) was in the position, technically and financially, to make an early start (1948) in the development of nuclear energy, even though Africa's uranium (from Belgian Congo and South Africa) contributed significantly to the early development of nuclear energy in the western world. Thus, when the French nuclear tests in the Sahara desert began in the early 1960s and rudely awakened Africa to the nuclear age, only the 250 Kw Triga Mark-I research reactor (now upgraded to 1 Mw) at the Louvanium University of Kinshasa was in operation in Africa. The South African 5 Mw (SAFARI-1) research reactor was only commissioned in 1965, and the Egyptian 2 Mw (INSHAS) research reactor was about the same vintage.

Even today, only two other African countries (Libyan Arab Jamahiriya and Algeria) have acquired operating research reactors or any other nuclear facilities to which IAEA safeguards can be applied. Of these five African countries with research reactors, only South Africa has other advanced nuclear facilities, which include two power reactors at Koeberg and other facilities capable of handling the front-end of the nuclear fuel cycle (involving uranium conversion, fuel fabrication, uranium enrichment, etc.). Some of the larger countries in Africa had at one time or another announced their intention to acquire nuclear reactors for research or for electric power, and some had even negotiated multi-million dollar contracts for turn-key projects. However, it appeared that subsequent political and economic upheavals in these countries, together with a lack of the necessary basic technological infrastructure and expertise, led to unrealistic plans that they could not implement.

When the NPT was negotiated in 1968, many countries in Africa were among the early signatories to the Treaty. Over the years other African countries acceded to the NPT, but most countries in southern Africa "held out" against accession as long as South Africa, whose nuclear capability was a major issue of concern to Africa, had not acceded to the NPT and submitted all its considerable nuclear activities

to comprehensive IAEA safeguards. The situation changed dramatically with the welcome accession of South Africa to the NPT on 10 July 1991, and the early conclusion of the NPT full-scope safeguards with IAEA in a record time of only seven weeks, on 16 September 1991. Since then all the “hold-out” States in southern Africa have acceded to the NPT, bringing the total of the African countries currently parties to the Treaty to 50. Of these, only 19 have also concluded the comprehensive safeguards agreements with IAEA as required by article III of the Treaty, and some of them took over 20 years after signing the NPT to fulfil this obligation.

Algeria was the last African State with significant nuclear development and activities (two research reactors) to accede to the NPT, on 12 January 1995. This happy event leaves only Angola and Djibouti, which have no known nuclear facilities or activities, as the remaining African States yet to become parties to the NPT. Thus with all nuclear facilities and activities in Africa under the NPT full-scope IAEA safeguards, there are now much better prospects for closer regional and international cooperation in the field of peaceful uses of nuclear energy. Safeguards in Africa would have remained a pretty colourless affair, compared with the events in Iraq and the Democratic People’s Republic of Korea (DPRK), but for the exciting news from South Africa in March 1995, described below.

The world community was still reeling from the shock of the Persian Gulf War revelation that Iraq, a non-nuclear weapon State party to the NPT and under IAEA safeguards, was developing nuclear weapons capability in clandestine unsafeguarded facilities, in parallel with its overt safeguarded nuclear programme, when the disturbing case of the DPRK assumed centre stage, both at IAEA and the United Nations. After acceding to the NPT in 1985, the DPRK delayed for five years the conclusion of the obligatory comprehensive NPT safeguards agreement with IAEA.

Then the IAEA verification of the initial inventory declared by the DPRK revealed major inconsistencies that needed further investigations by IAEA to resolve. The refusal to allow these investigations and the special inspections foreseen in the NPT safeguards agreement set the DPRK on a collision course with IAEA. Even when the matter went to the Security Council, the threat by the DPRK to withdraw from the NPT took several months and bilateral interventions by the United States and some Asian countries to resolve.

In contrast to the above, South Africa's actions on acceding to the NPT in 1991 clearly stood out as exemplary. It took only seven weeks after its accession to conclude the required comprehensive NPT safeguards agreement with IAEA, a period far shorter than the allowed time of up to 18 months for this process. In view of the well-known history of the apartheid regime in South Africa, much interest was focused on IAEA's thorough verification of South Africa's declared initial inventory. This involved lengthy reconciliations of the accounting and operating records in the sensitive enrichment facilities, which was carried out with maximum cooperation and transparency by the authorities. This gesture by South Africa, as well as the reassuring result of the verification, received widespread commendation from several member States of IAEA.

Then in March 1993, President F. W. de Klerk revealed that South Africa had operated a nuclear weapons programme and had actually produced six nuclear weapons and was working on the seventh one, when a decision was taken to terminate the programme and dismantle the nuclear devices before acceding to the NPT. According to the information from South Africa, the non-nuclear components of the devices were destroyed, and the highly-enriched uranium (HEU) components of the weapons were melted down and included in the declared initial inventory of South Africa that was subsequently verified by the IAEA safeguards inspectors.

This unsolicited revelation by South Africa caused widespread excitement, for South Africa was not obliged by any agreement to reveal its past nuclear activities. There were calls for IAEA to review its verification of South Africa's initial inventory to determine its correctness and completeness in view of this revelation. This incident prompted the sending of a high-powered team of IAEA inspectors, augmented by some nuclear weapons experts, to South Africa to carry out inspections at a number of facilities and locations connected with the abandoned former nuclear weapons programme. The team was able to confirm that the HEU declared in the initial inventory was consistent with the estimated output of the pilot enrichment plant (the Y-plant) operated by South Africa for several years since its first HEU output in 1978. It is very encouraging to note that South Africa came through the test of accession to the NPT with flying colours, and also set a very good example by its unstinted cooperation and transparency, which other nations could emulate in their dealings with IAEA in the matter of NPT safeguards implementation.

The Non-Proliferation Regime and Regional Concerns in Africa

Denuclearisation of Africa

When the French nuclear tests in the Sahara desert began in 1960 and gave rise to significant radioactive fallout in several neighbouring African countries, the continent showed its concern by raising the issue of cessation of nuclear tests in Africa at the United Nations in 1961. With the formation of the Organisation of African Unity (OAU) in 1963, the first Assembly of Heads of State and Government of the OAU in 1964 adopted the Declaration on the Denuclearisation of Africa. The Declaration called on all States not to test, manufacture or store nuclear weapons in the continent and announced Africa's readiness to undertake in an international treaty the obligation not to produce or acquire nuclear weapons. Thus a unilateral renunciation of the right to develop nuclear weapons was first undertaken by the African continent. Brazil alone had proposed a denuclearised Latin America at the United Nations in 1962.

Security Assurances

The next issue of long-standing interest to Africa as a region is that of security assurances. From the early stages of the negotiation of the NPT, security assurances became an important area of concern for Africa and for the rest of the non-aligned third world countries. Ethiopia, Nigeria and the United Arab Republic were among the eight non-aligned members of the multilateral Geneva disarmament conference that sought security assurances from the nuclear weapon states (NWS) in return for their acceptance of non-nuclear status. The group sponsored General Assembly resolution 2028 (XX), adopted without dissent on 23 November 1965.

In Security Council resolution 255 (1968), the three NWS (United Kingdom, Soviet Union and United States), readying themselves to join the NPT, gave as much as they were then prepared to give in positive security assurances to the non-nuclear weapon states (NNWS). The three NWS made declarations "that they will provide or support immediate assistance, in accordance with the Charter, to any NNWS Party to the Treaty on the Non-Proliferation of Nuclear Weapons that is a victim of an act or an object of a threat of aggression in which nuclear weapons are used".

On the issue of negative security guarantees, the NWS were less forthcoming, mainly because of the cold war and their different nuclear doctrines and security interests. Since 1968, both the negative and positive

security assurance issues have been raised repeatedly by Nigeria, Egypt and other NNWS that support the NPT but want to receive stronger security assurances in return for continuing to adhere to the NPT and for subscribing to its longer-term extension. At the 1990 NPT Review Conference, Nigeria proposed to conclude an agreement on the prohibition of the use or threat of use of nuclear weapons against NNWS parties to the NPT, while Egypt proposed to call on the Security Council to adopt a new resolution that would include credible assurances beyond what Security Council resolution 255 (1968) provided. The Egyptian proposal also sought a commitment by the NWS on negative security assurances to all parties to the NPT.

At the initiative of NNWS, the General Assembly urged agreement on negative security assurances at its 1992 regular session and reaffirmed “the urgent need to reach an early agreement on effective international arrangements to assure non-nuclear weapon states against the use or threat of use of nuclear weapons”. However, with the conclusion of the Tlatelolco Treaty in 1967, and the Rarotonga nuclear weapon free zone (NWFZ) Treaty in 1985, many States now enjoy unconditional security assurances through their membership in NWFZ. Africa has been in the forefront of the effort to extend security assurances to all non-nuclear weapon states on a global basis. The adoption of the African NWFZ Treaty should bring to Africa the same unconditional security assurances enjoyed by the members of the other nuclear weapon free zones.

African NWFZ

The year 1995 was destined to see the end of some of Africa’s major concerns in the nuclear age, when the Treaty on the African NWFZ was concluded. Even when the French nuclear tests were moved to the South Pacific islands, the impetus for the denuclearisation of Africa was kept alive by the existence of the apartheid regime in South Africa and the potential threat it posed to the rest of the continent. Happily that chapter in African history is now closed, and the continent can now look forward to the actualisation of the African NWFZ, with its promise of peace, progress and security in the region, as well as the enhancement of regional and international cooperative effort in the peaceful uses of nuclear energy in Africa.

Peaceful Uses and Regional Cooperation

The peaceful application of nuclear energy in Africa up to the 1990s has been mostly on a national basis, with each country getting

as much assistance as it could from IAEA and other international and national organisations. There was hardly any neighbourly exchange of experience or regional cooperation in such matters. African countries encounter many problems in the areas of health care, agriculture and industry whose solutions could benefit from the use of nuclear techniques, if the countries were in a position to apply them. Except in a few countries, national efforts at harnessing the peaceful benefits of nuclear energy have not been significant. In Africa, South Africa generates about 5 per cent of its electricity with its two power reactors at Koeberg, and only five African countries have nuclear research reactors that can provide them with short-lived radioisotopes for medical and other applications.

A method of obtaining greater benefits from peaceful applications of nuclear energy is through internationally sponsored cooperative projects. Several such undertakings have been mounted in various African countries in the past two decades with a considerable degree of success. These included: (a) Mediterranean fruit-fly eradication in North African countries; (b) biological control of tse-tse fly infestation (BICOT) project in Nigeria; (c) new world screwworm fly eradication in Libya; (d) rinderpest control project in 14 African countries; and (e) tse-tse fly eradication project in the island of Zanzibar in Tanzania. All the above projects but one involved the use of the sterile insect technique (SIT), and only the rinderpest project used a different method involving radioimmunoassay (RIA). Each project usually involved the country or countries affected by a pest, one or more United Nations organisations and several donor countries and/or their aid-giving agencies and foundations.

The eradication of the new world screwworm in Libya using the sterile insect technique (SIT) was one of the most successful cooperative projects in Africa in recent times. The international programme to eradicate this insect pest achieved complete success in April 1991, when the last case of screwworm infestation was found, compared with 12,068 cases in 1990. The SIT technique in this case involved the release of millions of laboratory-reared, radiation-sterilised screwworm flies over the infested area, thus increasing significantly the chance of sterile males mating with more fertile females and thus halting the reproduction of more offspring. The cost-benefit ratio of this programme exceeded 50:1, leading to millions of dollars in savings to the country in livestock production.

Apart from achieving the main objective of such projects and conferring considerable economic benefits on the countries affected by

a pest, these endeavours usually embody a large component of North-South technology transfer. The methods and techniques developed for each project, the scientific facilities and equipment provided, as well as the large cadre of scientists and technicians trained for the projects in each country, invariably remain to provide the necessary infrastructure for the continued benefits of such projects. It seems pertinent at this juncture to express the view that North-South technology exchange in nuclear science and industry has been freer and more transparent than in most other industries, thanks to international safeguards and the non-proliferation regime. The amount of North-South transfer in this field in Africa seems only limited by the ability of African countries to absorb it.

Regional Cooperation

The Asian Regional Cooperative Agreement (RCA) for research, development and training related to Nuclear Science and Technology, established in 1972, and a similar regional agreement for the Latin American region (ARCAL), had fully demonstrated the enormous benefits that accrue to a region from such cooperation. Hence, at the initiative of several African States, the African Regional Cooperative Agreement for Research, Training and Development (AFRA) was concluded with the support of IAEA and entered into force in April 1990, when three African member States of IAEA signed the agreement. In September 1994, the AFRA agreement was extended for another five years, as is the practice with such regional cooperative agreements. Currently, 19 countries have become members, in the following order: Tunisia, Egypt, Algeria, Nigeria, Madagascar, Libya, Morocco, Kenya, Sudan, Ghana, Tanzania, Mauritius, Cameroon, South Africa, Zaire, Ethiopia, Zambia, Niger and Cote d' Ivoire.

One of the exciting things to happen to AFRA recently is the admission of South Africa in 1992 as the 14th member. For 20 years up to 1977, South Africa had been a permanent member of the IAEA Board of Governors, representing the African region as its most advanced nation in nuclear technology. During this period, the African nations were denied any benefits that such a technically advanced country in their region could confer, mainly because of the apartheid system in South Africa. To show their concern for this anomalous situation, the African States chose Egypt as the permanent member for their region on the IAEA Board of Governors. It is significant to note that South Africa wasted no time, after returning to the African "family-fold", in inviting scientists from other African nations, through their Governments,

to visit South Africa and tour their nuclear establishments and to engage in cooperative endeavours with South Africa in the area of peaceful uses of nuclear energy.

Since its inception, AFRA has proved an important mechanism for promoting regional cooperation, coordinating resources and enhancing the region's capabilities in diverse areas of nuclear technology application. Participating countries aspire to build on achievements attained through national effort or with the assistance of IAEA, and also to ensure that available resources and expertise in the region can be most effectively shared. Specific AFRA programmes address the relevant areas of regional development as well as strengthen national basic infrastructure in radiation safety and effective use of nuclear and related technologies.

Food and Agriculture

Agriculture is the mainstay of the economy of most African countries, and it is often severely affected by many adverse climatic and environmental factors. Post-harvest losses of foodstuffs often reach 50 per cent, and such huge losses can be substantially reduced in grains, vegetables, root crops and fruits by food irradiation technology. The AFRA programme in food and agriculture supports collaborative efforts to use appropriate technologies to improve crop and livestock production. Current projects deal with food preservation using irradiation technology, animal reproduction and nutrition, as well as crop improvement by mutation breeding and biotechnology.

Human Health

African hospitals have used radiation and radionuclides for medical purposes in cancer therapy and diagnostics for decades. Currently, radioimmunoassay is used worldwide as a diagnostic technique in thyroid-related and iodine-deficiency disorders. As the reagents for this technique are imported by most African countries, an AFRA project initiated in 1991 has focused on the introduction of bulk reagent methodology, standard RIA practices and quality control, and the local production of some of the simpler primary reagents.

Industrial Applications and Instrumentation

Industrial applications of nuclear techniques used worldwide include non-destructive testing (NDT) for quality control of industrial products, and radiation processing used mainly for radiation sterilisation of single-use medical supplies and pharmaceuticals. Most African countries lack

the necessary infrastructure for the proper application of these techniques. Consequently, AFRA projects were initiated in NDT and radiation processing and provided training for several participants from many countries in ultrasonics and radiographic testing, as well as in radiation processing.

All nuclear-related activities involve specific and complex equipment and electronic instrumentation, which in Africa are often used in an unfavourable working environment of high humidity and temperature, dust and frequent power outages. As most of the equipment is imported, servicing and maintenance pose difficult problems of expense and logistics. With the support of IAEA, some AFRA States have adopted a regional approach to consolidate or upgrade their national instrumentation and electronics laboratories for the repair and preventative maintenance of nuclear and medical equipment.

Radiation Protection and Safety

Safe use of nuclear energy requires basic infrastructures for radiation protection and radioactive waste management. These involve the setting up of a competent national authority, the establishment of a legislative and regulatory framework, and the development of operational monitoring services for proper enforcement of radiation safety standards.

In most African countries, basic infrastructures are inadequate or non-existent, thus impeding the development of nuclear technology application programmes. Management and disposal of radioactive wastes arising from medical and industrial applications remain an issue of major concern in most African countries. AFRA programmes are now aimed at improving regional capability for proper radioactive waste management and the harmonisation of environmental monitoring approaches and measurement techniques. In addition, countries are encouraged to set up the necessary legislative and regulatory framework for ensuring safe application of nuclear energy.

Achievements and Prospects

From its inception, AFRA has successfully established a suitable framework that enables African scientists and technicians to share available resources and facilities, exchange information and experience, and assist those countries still in need of expertise in nuclear science and technology. There is now greater awareness in Africa that regional cooperation holds considerable benefits for everyone, a better understanding of the infrastructure and expertise available in the region, and an appreciation of the many constraints and weaknesses that still

prevent greater contribution of nuclear techniques to the social and economic development of the region. These achievements, albeit modest, have strengthened the concept of regional cooperation and self-reliance on the continent. The region's most developed countries are expected, and ready, to play a major role in further consolidating the benefits of nuclear technology to Africa through mutual assistance and regional cooperation by opening up their nuclear facilities to other African countries and by financially supporting AFRA activities.

Conclusion

From this overview, it could be considered that Africa has done creditably well in the area of safeguards and nuclear non-proliferation. Africa's early initiative in offering, as a region, to forswear the possession of nuclear weapons has now been fully vindicated by the number of nuclear weapon free zones already negotiated, including the African NWFZ. Indeed Africa can proudly claim a notable first of its kind in the area of nuclear disarmament. The revelation by South Africa in March 1993 that it had produced nuclear weapons, but had unilaterally decided to abandon the weapons programme and destroy the nuclear devices before accession to the NPT as a NNWS, is indeed unique in this nuclear age. An important lesson for humanity in this event is the demonstration that nuclear weapons are not indispensable.

Africa's achievements in the area of the peaceful application of nuclear energy are indeed minuscule compared with those of other regions of the world. With inadequate resources, poor scientific and technical infrastructure, and plagued by social and political instability, the efforts of individual countries in tackling their health-care, agricultural and industrial problems through the application of nuclear techniques have achieved limited results. However, by cooperating with other countries, either regional or internationally, greater results have become achievable, as has been demonstrated by various cooperative programmes.

South Africa's membership in AFRA and participation in other regional cooperative activities augur well for the region. The considerable experience and facilities of South Africa can help Africa close the huge gap in its application of nuclear technology. As the African NWFZ becomes a reality and all the institutional arrangements for its implementation fall into place, Africa will be able to reap more benefits from the applications of nuclear technology and also enjoy enhanced security assurances from its staunch adherence to the nuclear non-proliferation regime through the African nuclear weapon free zone.

THE AFRICAN NUCLEAR WEAPON FREE ZONE AND SUSTAINABLE DEVELOPMENT ON THE CONTINENT

Fifty years ago, when the United Nations was founded, Africa was already well known to the West and was no longer the “dark continent”. For most of Africa under colonial rule, another type of darkness reigned, as only two States—Ethiopia and Liberia—were politically independent. With their war for political independence won, 53 African States are now fighting a more difficult war against hunger, malnutrition, disease and economic deprivation. For that they sorely need a peaceful environment. The African Nuclear Weapon free Zone (NWFZ) Treaty promises a degree of peace and stability in which to fight this war and some of the tools with which to fight it. This article looks at the concept of safeguards and nuclear non-proliferation in the context of the Treaty, and discusses the relevance and potential of nuclear science and technology for contributing to the solution of the continent’s numerous and urgent problems.

Non-proliferation and the African NWFZ Treaty

The driving force behind the controlled chain reaction of December 1942 in Chicago, United States, was primarily military and led to the atomic bombings of Japan in August 1945. By 1952 the United States monopoly of nuclear weapons had disappeared, as both the former Soviet Union and the United Kingdom had succeeded in detonating nuclear explosive devices; the Soviet Union followed its fission bomb by the more devastating fusion one. Between 1960 and 1964, France and China joined the club of nuclear weapon states. In October 1962, the world was brought to the brink of nuclear war in the Cuban missile crisis, making it painfully clear that the horizontal and vertical proliferation of nuclear weapons only guaranteed a mutually-assured global destruction rather than peace and security. India declared its nuclear explosion capability in 1974 and South Africa constructed its first nuclear explosive device in 1976, while Israel is also acknowledged as a virtual nuclear weapon State. Pakistan has had a uranium enrichment plant in operation for almost a decade with no civil nuclear power programme to justify the effort, and a number of other States, such as Iraq and the Democratic People’s Republic of Korea (DPRK), are considered to be on the threshold of nuclear weapons technology.

From the outset, man had the option either to use the awesome power of the atom for destructive nuclear warfare or to exploit it safely for his own benefit. While the challenge of “rolling back” the curtain on nuclear weapons still remains a difficult and complex one, significant strides have been made towards reducing horizontal

proliferation of nuclear weapons and promoting peaceful applications of their technology. Significant milestones in this regard were the "Atoms for Peace" concept, leading to the establishment in 1957 of the International Atomic Energy Agency (IAEA); the 1967 Treaty on the Prohibition of Nuclear Weapons in Latin America and the Caribbean (Treaty of Tlatelolco); the 1970 Treaty on the Non-Proliferation of Nuclear Weapons (NPT), extended indefinitely in May 1995; and the 1986 Treaty of Rarotonga, declaring the South Pacific a nuclear free zone.

A nuclear weapon free zone treaty for Africa had been contemplated since 1960, when, despite a 1959 United Nations resolution to the contrary, the Government of France proceeded to conduct nuclear weapon tests in the Sahara. In 1961, a General Assembly resolution formally called upon all States "to consider and respect the continent of Africa as a denuclearised zone". That resolution was subsequently reaffirmed at the founding meeting of the Organisation of African Unity (OAU) in 1963, and has since been the long-standing vision of all independent African States. With the historic announcement by the South African Government, in March 1993, that it had dismantled its nuclear weapons programme, a major obstacle was removed and an African nuclear weapon free zone (NWFZ) Treaty became a de facto reality. Like the NPT and the two regional non-proliferation treaties before it, the African NWFZ Treaty requires States Parties to "conclude a comprehensive safeguards agreement with IAEA for the purpose of verifying compliance with the undertakings" of the Treaty, and to "promote individually and collectively the use of nuclear science and technology for economic and social development". The African NWFZ Treaty also will establish an African Commission on Nuclear Energy (AFCONE) to work in close collaboration with OAU and IAEA for the attainment of the two aforementioned major objectives.

Of 485 nuclear power stations either operational or under construction worldwide, Africa can boast only two power plants in South Africa and the few research reactors, either operational or under construction, in Algeria, Egypt, Ghana, the Libyan Arab Jamahiriya, Nigeria, South Africa and Zaire. With the clear exception of South Africa, and possibly Egypt, it is obvious that Africa's nuclear science and technology is only at its nascent stage. Indeed, except for the policies of the former South African Governments and the attitudes of the nuclear weapon states, all nuclear activities by African States have been of such a modest and peaceful nature and under full view of IAEA that an African denuclearised zone would have long been possible. It is therefore to the considerable credit of the present South African Government that it has unilaterally rejected nuclear weapons and made

a vital contribution to the realisation of the African NWFZ Treaty. In fact, Africa can be proud of South Africa for having shown the nuclear weapon and would-be nuclear weapon states that security is provided by nuclear disarmament and not by the proliferation of unlimited destructive capability. Indeed, the nuclear weapon states are challenged to break their “nuclear sword” and to match South Africa’s miniature ploughshare now at the headquarters of IAEA in Vienna.

The development of regional non-proliferation treaties, like those of Tlatelolco and Rarotonga, has been welcomed as having a great potential for strengthening the nuclear non-proliferation regime and eventual nuclear and general disarmament. In that context, the recent adoption of the African NWFZ Treaty should be regarded as a milestone. International political and legal frameworks like the African NWFZ Treaty and institutions like AFCONE are essential requirements for ensuring the effective and safe use of nuclear energy for peaceful purposes in Africa.

Nuclear Energy in Peaceful Applications

Alongside its provision for safeguards in article III, the Treaty, in article IV, requires that “all parties to the Treaty undertake to facilitate, and have the right to participate in, the fullest possible exchange of equipment, materials and scientific and technological information for the peaceful uses of nuclear energy”. The NPT also provides for “the further development of the applications of nuclear energy for peaceful purposes, especially in the territories of non-nuclear weapon states Party to the Treaty, with due consideration for the needs of the developing areas of the world”. Thus, while enabling its member States to make binding and verifiable commitments to non-proliferation, the NPT also promises to facilitate a transfer of peaceful nuclear applications to those making the commitments. The same objectives, as in the NPT, underlie the Tlatelolco and Rarotonga Treaties, and now the African NWFZ Treaty.

When considering the peaceful applications of nuclear energy, there are a number of unique and versatile applications that already are, or have potential for, transforming socio-economic development, notably in food and agriculture, human health and nutrition, natural resources exploration and development, environmental monitoring and protection, and industry and research. The contributions of nuclear techniques, particularly in agricultural research and development, are considerable. Through the Joint FAO/IAEA Division for Nuclear Techniques in Agriculture—formed in 1964 by the unification of the Food and Agriculture Organisation’s atomic energy branch and IAEA’s agricultural

unit—many countries have been helped to solve practical and costly problems in the areas of soil fertility, irrigation and crop production; plant breeding and genetics; animal production and health; insect and pest control; agrochemicals and residues; and food preservation and sterilisation. The Division's activities have enabled nuclear techniques in agricultural research and development to increase and stabilize agricultural production; reduce production costs; improve the quality of food and protect agricultural products from spoilage and losses; and minimize pollution of food and the agricultural environment.

The Relevance of Nuclear Techniques to Africa's Development

Prior to about 1950, increases in food production were achieved mostly by bringing more land into cultivation. However, as only 11 per cent of the total land surface of the planet is suitable for farming, it was not possible for this trend to continue indefinitely. Since the 1950s, gains in food production have been obtained largely by increasing yields through more irrigation, more and better mechanisation, the use of fertilizers and pesticides, and of new high-yield crop varieties. However, this strategy has also not been without its limitations and problems. Billions of metric tonnes of topsoil are lost annually, so that by the year 2000, according to FAO estimates, soil degradation will take 65 per cent of all the third world's rain-fed land out of production. In addition, 1.5 million hectares of irrigated fields are lost each year to salination. Marginal land and water resources have been greatly overused, and about two billion people in 80 countries around the world live in areas suffering from chronic water shortages. On the other hand, run-off from agricultural lands, with excessive use of pesticides and fertilizers, pollutes rivers, streams and lakes, leading to serious global problems for health and the environment. Recent estimates have shown that the annual total toxicity of all heavy metal pollutants exceeds the combined total toxicity of all radioactive and organic wastes generated globally each year.

The food security problem worldwide is exacerbated by post-harvest food losses through various spoilage agents and insect infestation. The United States National Academy of Sciences has estimated that post-harvest food losses in developing countries in 1985 amounted to more than 100 million tonnes at a value of US \$ 10 billion. It is believed that up to 50 per cent of perishable foods, such as fish and seafood, fruits and vegetables, meat and poultry, and as much as 25 to 30 per cent of grains are lost annually in this way.

A problem closely related to food security is food safety. A 1984 report of the Joint FAO/IAEA Expert Committee states that "illness

due to contaminated food is perhaps the most widespread health problem in the contemporary world and an important cause of reduced economic activity". Food-borne disease is a widespread and significant cause of morbidity, the social and economic consequences of which are considerable, particularly in the developing countries. The World Health Organisation (WHO) estimates that infectious and parasitic diseases represented 35 per cent of all deaths worldwide in 1990, the majority of which occurred in the developing countries. While diarrhoeal diseases represented 25 per cent of all deaths in developing countries, it is estimated that up to 70 per cent of these are due to contaminated water and food-borne diarrhoeal diseases.

Malnutrition or undernutrition, also referred to as "hidden hunger" because its many effects are not visible to the eye, affects some 780 million people, or 20 per cent of the developing world. About 190 million children under the age of five, including 27 million in Africa, suffer from protein-energy malnutrition. About 40,000 children in this age group die every day largely because of malnutrition. Some two billion people in more than 100 developing countries suffer from micronutrient malnutrition, or vitamin and mineral deficiencies, that can lead to blindness, mental retardation, and even death.

Africa's economic problems may be seen in the context and as part of the general global problem of developing countries. However, in the case of Africa, most of the available statistics are particularly alarming. Since 1960, Africa's population has had an average annual growth rate of 3 per cent, the highest for any region. On the other hand, food production has grown by only about 1.8 per cent, leading to a drop in food self-sufficiency ratio of 19 per cent. The average per capita production of staple food in 1990 stood at 199 kg, as compared to 271 kg for Latin America, and 312 kg for Asia. The region's annual food imports now account for some 30 per cent of its agricultural export earnings.

Water shortages are also not the least of Africa's problems. It is estimated that by the end of the century, Egypt will have only two thirds, and Kenya, only half of the water available today, while six out of seven East African countries and all five South Mediterranean countries will face water shortages. Population growth, droughts, crop failures and accelerating imports in the face of a crippling debt burden have forced many African States to increasingly rely on food aid. A 1993 FAO study estimates that, if the situation is not reversed, about 296 million people in Sub-Saharan Africa, representing 32 per cent of the population, will suffer from chronic malnutrition by the year 2010. Further analysis of the food situation in Africa reveals that a 70 per

cent increase in crop production up to the year 2010 will have to be achieved through increases and intensified cropping if Africa is to be able to feed its peoples.

Africa's chronic food shortages and economic condition are seen by most experts, first and foremost, as a problem of its agricultural stagnation, and the issue of food security and self-sufficiency is obviously a matter of top priority. While the solution of these problems is primarily a question of sound economic policy and planning, it can also be appreciated that the potential contributions of nuclear science and technology are considerable. The African NWFZ Treaty puts this in proper perspective with all States Parties undertaking "to promote individually and collectively the use of nuclear science and technology for economic and social development" and "to establish and strengthen mechanisms for cooperation at the bilateral, subregional and regional levels". In particular, the Treaty encourages Parties "to make use of the programme of assistance available in IAEA" and "to strengthen cooperation under the African Regional Cooperative Agreement for Research, Training and Development Related to Nuclear Science and Technology (hereinafter referred to as AFRA)". AFRA is an intergovernmental arrangement that first came into force in April 1990 for five years, and has now been endorsed to continue for a further five years till the year 2000.

Technical assistance through IAEA is a significant expression of the international commitment made in the NPT to balancing non-proliferation and "Atoms for Peace". In fact, IAEA serves as the key international mechanism for scientific and technical cooperation in the nuclear field. Worldwide, there are now more than 80 developing countries receiving IAEA assistance, and resources made available through the technical assistance programme over the past 25 years amount to nearly US \$690 million. In 1995, there are more than 1,200 projects in the programme with a total cost of nearly US \$51 million, the geographical distribution being 25.5 per cent for Africa. That distribution has not changed significantly during the last ten years. For the 1995-1996 biennium, the breakdown of this assistance is 22 per cent for food and agriculture, 16 per cent for human health, 12 per cent for the physical and chemical sciences, and 11 per cent for industry and the earth sciences. From 1971 to 1992, 18 least developed countries, 12 of which are in Africa, have on average received 12 per cent of all the Agency's assistance.

For many African countries, the introduction of nuclear techniques for research and training started only in the late 1970s. Thus, of 53

independent African States, only 27 are members of IAEA, and of these, only 19 have so far joined the AFRA programme. There are vast differences in development and use of nuclear technology, ranging from those with little or no activities in the field, to those with research reactors and nuclear power plants, such as South Africa. The successful application of nuclear technology requires a sound policy of technological development and the provision of adequate financial resources, infrastructure and trained manpower. Many of these prerequisites are lacking in African countries, in no small measure due to the lack of awareness on the part of planning authorities as to the usefulness and applicability of nuclear techniques in a number of priority areas of economic development.

The first five-year period of AFRA saw the development of ten projects covering a wide range of nuclear applications, efforts being concentrated on capacity-building to translate the regional commitments of cooperation into technically and economically sound activities. Efforts were concentrated in the areas of waste management, food preservation, irradiation processing, nuclear instrumentation, local preparation of radioimmunoassay reagents, non-destructive testing, animal production and nutrition, plant breeding and biotechnology, and environmental radiation monitoring and harmonisation. Activities in these fields have contributed greatly to increased awareness that regional cooperation holds considerable benefits, and also to a better understanding of the infrastructure and expertise in the region, and, not least, the constraints and weaknesses of the earlier capacity-building efforts resulting from the inadequate provision for the practical utilisation of the expertise gained.

While consolidation of the achievements of the first five-year period is to continue, the second five-year period has been entered with a new thematic approach to projects in order to provide better focus, through a more critical assessment of relevance, on the definition of milestones in implementation and the evaluation of return on investment and social impact. The thematic approach for now is to pay special attention to four areas of immediate concern in the region. These are: (a) the strengthening of radiation protection infrastructure in member States; (b) the application of nuclear technology to human health initially through employment of radioimmunoassay techniques to the early determination of hyperthyroidism; (c) the application of radiation-induced mutation to crop breeding to produce more drought-resistant, higher-yield and disease-resistant crops to increase food production and generate greater export earning capacity; and (d) the promotion of

radiation technologies, such as food irradiation, non-destructive testing, nuclear instrumentation, clinical radiotherapy, and nuclear reactor operation and utilisation.

A new feature in the Agency's technical cooperation programme, which comes during the second five-year period of AFRA, is the introduction of the "model project" concept. This has arisen from the need for greater precision in the identification of projects that will have the most impact and therefore places special emphasis on projects that are in line with national development plans, are of a practical nature, are oriented towards specific end users, and are intended to have a significant impact on the country's overall development. If this approach is successful, the "model project" concept is expected to influence the Agency's technical cooperation activities in the future. One model project now in progress in the African region is "Isotopes in Groundwater Resources Development", covering nine African States in the arid and semi-arid zones.

Conclusion

It should be emphasised that regional cooperative activities are meaningful and relevant only in the context of well-thought-out national efforts in technological development. Lessening the need for independent efforts, they constitute a cost-effective way to strengthen national capacities. This having been said, it is well to note that the African NWFZ Treaty is not an end in itself, but a means to fostering accelerated development in nuclear science and technology to better tackle the numerous social and economic problems facing our continent.

Like developing regions elsewhere, Africa's priorities are not nuclear warfare plans and weapons programmes, and the need for safeguards may not seem to be a great one. However, there is no denying that keeping Africa free from nuclear weapons will have a major influence in the establishment of denuclearised zones in the Middle East, Southeast Asia, and hopefully, in Europe and North America. Every little contribution we Africans can make towards nuclear disarmament and eventual general disarmament can only increase our chances of better coping with the most urgent and basic problems of sustainable economic and social development facing us today.

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SOUTHEAST ASIA NUCLEAR WEAPON FREE ZONE: NEXT STEPS

In establishing a nuclear weapon free zone (NWFZ), the zonal States are not merely reaffirming their commitment under the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) not to develop nuclear weapons. They are making a declaration, a statement that they do not want nuclear weapons in their region. They are underlining that their region, and the planet, would be better off without such weapons. Thus the basic objective of all NWFZs, and their obvious contribution to world security, is to render a region free from nuclear weapons.

The 1995 NPT Review Conference recognised that the establishment of internationally recognised NWFZs, freely arrived at among the States of the region concerned, enhanced global and regional peace and security. Development of NWFZs was further encouraged, especially in regions of tension, such as the Middle East.

Background

The oldest existing NWFZ was established in Latin America and the Caribbean by the Treaty of Tlatelolco, in 1967; eighteen years later, in 1985, the South Pacific became nuclear free by the Treaty of Rarotonga. Almost 30 years after the establishment of the first NWFZ, Southeast Asia and Africa were declared nuclear weapon free by the Bangkok and Pelindaba Treaties, in 1995 and 1996, respectively.

A number of factors contributed to the successful establishment of the two most recent zones: the end of the cold war and the settlement of long-standing conflicts in those regions. Only when some measure of peace and stability prevailed was it possible for those States to forge their “code of conduct” to create an environment that fostered the establishment of a NWFZ.

Southeast Asia Nuclear Weapon free Zone

The idea for a nuclear weapon free zone in Southeast Asia was first enunciated at the ASEAN Foreign Ministers Meeting in Kuala Lumpur in November 1971. The ASEAN foreign ministers issued the Declaration on the Zone of Peace, Freedom and Neutrality (ZOPFAN), commonly referred to as the Kuala Lumpur Declaration. They noted the trend towards establishing nuclear free zones and agreed that the neutralisation of Southeast Asia was a desirable objective. They expressed their determination to secure the recognition of and respect for Southeast Asia as a zone of peace, freedom and neutrality. It was also agreed that the establishment of the Southeast Asia Nuclear Weapon free Zone (SEANWFZ) would be an essential component of ZOPFAN.

By the late 1970s, ASEAN officials successfully produced the first and second drafts of a NWFZ treaty. At that time, contacts were initiated with other countries in Southeast Asia, in particular in Indochina, not part of ASEAN. From 1979 up to the early 1990s, however, the Cambodia problem effectively prevented the conclusion of a treaty. Following the signing of the Paris Peace Accords in 1991 and the United Nations-sponsored elections in Cambodia in 1993, the ASEAN foreign ministers in 1995 declared that conditions in Southeast Asia approximated those envisaged in the Kuala Lumpur Declaration for the establishment of the nuclear weapon free zone. Efforts culminated in the signing of the Bangkok Treaty during the fifth ASEAN summit in December that year. In addition to the seven members of ASEAN, the signatories included the three non-ASEAN countries, namely, Cambodia, Lao People's Republic and Myanmar. The zone of application of the Treaty extends to all of Southeast Asia.

Entry into Force

The most recent NWFZ Treaty to enter into force was the Bangkok Treaty, on 27 March 1997, the date on which the seventh instrument of ratification was deposited. Thailand is the depositary for the instruments of ratification of the Bangkok Treaty. Information on the States parties that have ratified the Treaty and the dates on which their instruments of ratification were deposited is given in Table 1.

Signature by Nuclear Weapon States

All existing NWFZs seek the acceptance or signature of the five nuclear weapon states (NWS). Of the four treaties, the NWS have signed all but one. The Bangkok Treaty is presently the only treaty that has not been signed or ratified by the NWS.

Similar to other nuclear weapon free zone treaties, a Protocol is attached to the Bangkok Treaty. The Protocol is open for signature by the five NWS. Following the signing of the Treaty, however, all five NWS indicated that they had difficulties with certain provisions of the Treaty and Protocol. Unless changes were made to the Protocol, no NWS would be able to sign it.

In his closing statement at the fifth ASEAN summit, the Chairman, Prime Minister Banharn Silapa-Archa of Thailand, announced that the States parties would “review” the Protocol to the Treaty. The ASEAN Senior Officials Meeting (SOM) Working Group on ZOPFAN and SEANWFZ was subsequently tasked to carry out the review and to undertake consultations with the NWS.

To date, two rounds of consultations have been conducted with the NWS. The first, between Malaysia, as Chairman of the ASEAN Working Group on ZOPFAN and SEANWFZ, and representatives of the NWS was held in November 1996.

In the second round of consultations in June 1997, representatives from NWS met with the members of the ASEAN Working Group. While some NWS have expressed appreciation for the effort of the Working Group in negotiating, they still feel that it has not yet directly addressed their concerns. The process of consulting is expected to continue.

The primary concern of the NWS is the inclusion of the exclusive economic zones (EEZ) and continental shelves in the definition of the zone. NWS maintain that such inclusion raises questions about the consistency of the principles embodied in the 1982 United Nations Convention on the Law of the Sea (UNCLOS), mainly those concerning the freedom of the high seas. In addition, the NWS maintain that continental shelves and EEZs have never been clearly delimited in the South China Sea, which could create uncertainty over the scope of the Treaty and the Protocol obligations and could be a source of conflict owing to competing territorial claims in the region.

The second concern of the NWS deals with article 2 of the Protocol and the precise nature of the legally-binding negative security assurances (NSA) from the Protocol parties. Under article 2, each State party to the Protocol (a NWS) undertakes not to use or threaten to use nuclear weapons against any State party to the Treaty. It further undertakes “not to use or threaten to use nuclear weapons within the Southeast Asia Nuclear Weapon Free Zone.” The second sentence of this article is of concern to the NWS. Citing their policy of nuclear deterrence, the

NWS want the entire second sentence deleted. In their consultations with the NWS, the States parties have proposed certain amendments to the second sentence but so far no agreement has been reached. Consultations with the NWS are expected to continue to seek an acceptable solution.

Next Steps

The States parties will continue to seek and encourage acceptance by the NWS of the Bangkok Treaty. They recognize, however, that it would only be possible after the NWS concerns have been satisfactorily addressed. In the meantime, following the entry into force of the Bangkok Treaty, Thailand as the depositary State submitted the Treaty in June 1997 for registration with the United Nations in accordance with Article 102 of the United Nations Charter.

Under the provisions of the Treaty, once it has entered into force, two institutions are to be established. The first is the *Commission* for the SEANWFZ. Each State party is *ipso facto* member of the Commission and shall be represented by its foreign minister or his representative, accompanied by alternates and advisers. The function of the Commission shall be to oversee the implementation of the Treaty and ensure compliance with its provisions. The second body to be established is the *Executive Committee*, a subsidiary organ of the Commission. Like the Commission, the Executive Committee shall comprise all States parties to the Treaty and shall be represented by one senior official, who may be accompanied by alternates and advisers.

In promoting wider knowledge and acceptance of the Treaty, one possible action that could be taken is to seek its endorsement by the United Nations. This could take the form of a General Assembly resolution. It is still unclear what the benefits of such an action would be other than for the Assembly to recognize the fact that the Treaty has been signed and has entered into force. However, until the concerns of the NWS have been satisfactorily resolved, tabling such a resolution could provoke unnecessary confrontation.

On the wider issue of NWFZs in general:

- The proposal for cooperation among the existing nuclear weapon free zones has been mooted. The idea was endorsed by the General Assembly at its 51st session in December 1996 under the item "The nuclear weapon free southern hemisphere and adjacent areas". Resolution 51/45 B called on the States parties in the four zones to explore and implement further ways and

means of cooperation, including the consolidation of the status of the nuclear weapon free southern hemisphere and adjacent areas. As I understand it, the idea does not envisage any legal links between the NWFZs but suggests political links. These could include establishment of mechanisms for consultations as well as communication networks or data exchanges between the respective zones.

- The possibility of establishing NWFZs in other regions has been suggested. Resolution 51/45 B, which called on all States to consider proposals to establish other nuclear weapon free zones, specifically the Middle East and South Asia. It is evident, however, that major obstacles remain in such regions and do not appear likely to be easily resolved in the foreseeable future.

Conclusion

NWFZs are positive contributions to nuclear non-proliferation and disarmament efforts. At the very least, they remind us that a large number of countries have rejected the nuclear option, do not want nuclear weapons in their region, and believe that their regions and the world as a whole would be better off without them.

NUCLEAR WEAPON FREE ZONES: PROSPECTS AND PROBLEMS

As a result of the overall warming of the international climate in the post-cold war period and the initiatives taken by numbers of States to foreclose the spread of nuclear weapons on their territories, the world is undergoing a process whereby vast areas of the globe are being turned into nuclear weapon free zones (NWFZs). Once both the Pelindaba and Bangkok Treaties have entered into force (the Bangkok Treaty entered into force on 27 March 1997), it is estimated that 1.7 billion people will live in nuclear weapon free areas. Together with Antarctica, they cover more than half of the globe. Some States have proposed to declare the entire southern hemisphere a nuclear weapon free area, and hence a safer and healthier place to live.

It is widely recognised that the creation of additional NWFZs in different regions of the world constitutes an important confidence-building and disarmament measure that enhances regional as well as global peace and security. This was reflected in the Final Document of the first special session on disarmament (SSOD I), in numerous subsequent documents, and in the Principles and Objectives for Nuclear Non-Proliferation and Disarmament of the 1995 NPT Review and

Extension Conference. The latter stated that “the establishment of additional nuclear weapon free zones by the time of the Review Conference in the year 2000 would be welcome”. On 12 April 1996, the President of the Security Council, on behalf of the Council members, welcomed the signing of the Pelindaba Treaty and encouraged such regional efforts.

That positive momentum should not be lost, since a great many more States are still not covered by the existing zones. In these circumstances, consideration of the conceptual and practical questions pertaining to enhancing the existing zones and accelerating the emergence of new ones is timely and useful.

The 1996 session of the General Assembly and the 1997 session of the Disarmament Commission (DC) have clearly demonstrated that the international community attaches great importance to the question of NWFZs. By agreeing on a three-year consideration of the question of elaboration of general guidelines for the creation of NWFZs, the Disarmament Commission has expressed its desire to promote the creation of new zones.

Characteristics of NWFZs

Comparative studies demonstrate that the existing zones reflect characteristics specific to the regions concerned. For instance, the Pelindaba Treaty contains provisions that ban research on nuclear explosives and attacks on nuclear installations. The Bangkok Treaty, for its part, pays attention to nuclear accidents, and its geographic scope includes continental shelves and exclusive economic zones (EEZ).

Despite their differences, all zones have similar objectives, such as non-possession of nuclear weapons by zonal States, non-stationing of nuclear weapons within the zone by any State, non-use or threat of use of nuclear weapons throughout the zone or against targets within the zone and a viable verification system.

Based on past experience, there seem to be some fundamental requirements that need to be met in order to create a NWFZ:

- It should be created on the basis of arrangements freely arrived at among the States of the region concerned.
- The initiative for the creation of such a zone should come from the States concerned.
- The zone should form a coherent and clearly defined geographical entity.

- The obligations of all States parties to the zone should be clearly defined and legally binding.
- Those obligations should reflect the specific nature and characteristics of the region concerned.

There also appear to be some general rules to be followed for the successful conclusion of a NWFZ:

- It should be recognised by the General Assembly.
- It should be consistent with the existing international instruments of nuclear non-proliferation and disarmament.
- All States of the region should participate in the zone.
- The zone should enjoy the support of all nuclear weapon states.
- The zone should not adversely affect existing regional or international security arrangements.

Those general rules notwithstanding, it should be underlined that a NWFZ should, by definition, have a positive impact on the existing security arrangements and substantially improve them. Also, it is my belief that all zonal States should participate to constitute a NWFZ. One cannot exclude the (highly undesirable) situation where a State of a given region or subregion might not be prepared at a given time to assume zonal obligations. That situation should not serve as a veto over creating the zone; the reluctant State could join later. The question of denuclearising only a part of a State's territory – theoretically possible, yet practically difficult to enforce – would seem to raise more questions than it would solve.

Practical Importance of NWFZs

For the zonal States, the practical value of NWFZs lies in the fact that the arrangements go beyond the non-proliferation of nuclear weapons. Nuclear non-proliferation arrangements do not include a ban on deployment of nuclear weapons on territories of non-nuclear weapon states. A NWFZ rules out nuclear weapons deployment in the zone and also implies the removal of such weapons where they or their parts exist. As to verification, the IAEA safeguards system is limited to ensuring non-diversion of nuclear material. The essence of zonal monitoring arrangements is to exclude any import of nuclear weapons into the zone or the use of territory within the zone by an extraregional State for manufacturing or testing nuclear weapons. Furthermore, the negative security assurances contained in most NWFZ treaties meet the legitimate demand of non-nuclear weapon states

regarding the threat to their national security posed by the existence of nuclear weapons.

Existing Zones

Though many proposals to create NWFZs have been put forward, starting with the "Rapacki Plan" to denuclearize Central Europe, there exist today five geographical regions, and one State, that enjoy NWFZ status: the Antarctic continent was demilitarised by the Antarctic Treaty in 1961; Latin America and the Caribbean was denuclearised by the 1967 Treaty of Tlatelolco; the South Pacific was declared nuclear free by the 1985 Rarotonga Treaty; Southeast Asia, by the 1995 Treaty of Bangkok; and the African continent, by the 1996 Treaty of Pelindaba.

The less known NWFZ is the single-State zone of Mongolia, declared in 1992. All nuclear weapon states have welcomed it and declared that their negative and positive security assurances apply. Moreover, the entire Non-Aligned Movement has welcomed the initiative and expressed support for its efforts to institutionalize the zone.

The main task ahead for these zones is to consolidate the existing regimes and to ensure their earliest possible entry into force and institutionalisation.

Proposed NWFZs

The appropriate geopolitical environment and political will are critical for the five proposed NWFZs: in Central and South Asia, the Middle East, the Korean peninsula and Central/Eastern Europe. The creation of NWFZs in those parts of the world is most welcome as they would enhance predictability, build confidence and promote regional security.

Political obstacles notwithstanding, efforts to create such zones in and of themselves could promote predictability, regional stability and confidence that are necessary for taking measures aimed at ensuring security of States and the region as a whole.

South Asia

The creation of a South Asia NWFZ, proposed by Pakistan in the mid-1970s, will depend on the position taken by the main actors in the region. Though Indo-Pakistani bilateral relations have an obvious impact on progress in this field, the sole nuclear Power in the region, China, could play a constructive role by refraining from further build-up of its nuclear arsenal and by enhancing transparency of its nuclear programmes. If such a zone could be established, it would, in my

view, have far-reaching strategic and political impact on the region and beyond.

Middle East

As to the Middle East, the General Assembly has been adopting yearly resolutions on this question, without a vote. The panel appointed by the Secretary-General in 1991 to recommend measures to facilitate the creation of the zone pointed out that an overall improved political climate, including progress in the Middle East peace process, was required. I believe that conclusion is still valid today.

Korean Peninsula

The Joint Declaration on the Denuclearisation of the Korean peninsula, signed by representatives of the Republic of Korea and the Democratic People's Republic of Korea in December of 1991, could form the basis for creating a nuclear weapon free Korean peninsula. Lack of trust, however, as well as of follow-up measures on the agreement, render this declaration merely a declaration of intent, with no real possibility of follow-up.

Central and Eastern Europe

For the idea of creating a NWFZ in Central and Eastern Europe to become a reality, it would need an appropriate geopolitical environment. Eastward expansion of NATO has, it seems, put the idea on hold. NATO obligations, if not altered, would make the idea of creating a NWFZ in Central and Eastern Europe more difficult, if not impossible. Perhaps the Norwegian precedent of pledging not to accept nuclear weapons on its territory in peacetime could be an alternative, though it would surely set an undesirable precedent of weakening the very concept of NWFZs. There are also apprehensions that expansion of NATO to the east might set in motion a process that could force Russia to adopt the NATO doctrine of countering conventional arms superiority by relying more heavily on its nuclear arsenal or by finding other ways of countering the perceived threat, including retaining the option of stationing nuclear weapons or parts thereof in some of its neighbouring States. That would be tantamount to vetoing the creation of NWFZs on its border regions.

Central Asian NWFZ

Unlike the above four regions, the new geopolitical subregion of Central Asia, created as a result of the disintegration of the Soviet

Union, has promising prospects of becoming a new NWFZ. The world has already witnessed the denuclearisation of the States of this subregion. Nuclear weapons have been withdrawn; Kazakhstan and others have acceded to the Non-Proliferation Treaty; the nuclear weapons testing site at Semipalatinsk, where 459 tests had been conducted, was closed down and its infrastructure is being dismantled. Those steps have already had a positive impact on enhancing confidence-building and stability in this subregion—and beyond. Moreover, all the States of the subregion support the idea. Mongolia, a Central Asian State itself, which recognises the limitless opportunities and enormous challenges of the region, declared in 1992 its support for a Central Asian NWFZ.

The vulnerable landlocked States of Central Asia have vast territories, rapidly growing populations and rich natural resources. They are in the process of State-building, of identifying their national interests and priorities. Mindful of the situation in some southern parts of Asia, the growing outside interest in the untapped energy and mineral as well as unutilised human resources, it goes without saying that the creation of a NWFZ in this subregion would have a positive impact on maintaining and strengthening the overall balance and stability in the region and its strategically important adjacent areas. The International Conference in Tashkent on this question could set in motion the process of creating the zone in the heart of the Eurasian landmass. Mongolia, as an interested neighbour, is looking forward to making its contribution to the establishment of this zone.

Concept and Practice of Single-State Zones

One of the novelties in the concept and practice of NWFZs since the end of the cold war is the development of the single-State zone. Until the early 1990s, the conventional notion of a NWFZ was a vast area comprising territories and adjacent waters of several States or covering specific geographical regions or entire continents. That was quite understandable, since until very recently that was the case. However, the term “nuclear weapon free zone” is now defined more broadly as referring also to a region or an area within the borders of a State. As many States are not covered by existing zones, one cannot rule out the possibility of the creation of more single-state zones.

In 1974, the General Assembly requested that a comprehensive study of the question of NWFZs in all its aspects be carried out by an ad hoc group of qualified governmental experts under the auspices of the Conference of the Committee on Disarmament (CCD). The study, adopted unanimously, was transmitted to the General Assembly at its

thirtieth session. The first principle the report defined was that “obligations relating to the establishment of nuclear weapon free zones may be assumed not only by groups of States, including entire continents or large geographical regions, but also by smaller groups of States and even individual countries.

Five years ago, Mongolia, strategically situated between two nuclear weapon states, declared its territory a NWFZ. That policy, as mentioned earlier, was welcomed and supported by the nuclear weapon states, including Mongolia’s two neighbouring nuclear powers. It was welcomed by the entire membership of the Non-Aligned Movement, by some Western European States, Japan and others. That overwhelming support underlined the notion that a single-State zone was not only a theoretical possibility, but also politically acceptable and realizable.

By declaring its territory, as large as Central Europe, a NWFZ, Mongolia is in the first place trying to strengthen its security by political means. Its policy advances the goal of nuclear disarmament and non-proliferation, and contributes to reinforcing stability in a strategically sensitive region.

The assurances given by the five nuclear weapon states to Mongolia are an expression of support for the concept of a single-State zone. Nevertheless, to be credible, the zone cannot be based on unilateral declarations of support only, especially since they contain different formulations, conditions and reservations. Also, unlike legally-binding commitments, unilateral declarations are easily susceptible to changes of heart or mind. A NWFZ can be credible only when it has a clear legal basis, when parties to the arrangement have legally defined their rights and obligations. The zone, therefore, should be properly established and institutionalised, like other zones. In Mongolia’s case, enforcing the NWFZ regime would require cooperation on the part of its neighbours and a verification mechanism to cover a territory whose population density is about 1.5 persons per square kilometre.

Compared to existing zones, a single-State zone has some obvious advantages: the geographical scope of the zone is *a priori* well-defined; there is no need for intra-zonal negotiation or coordination; and the responsible party is apparent. In order to benefit from the advantage of a defined geographical scope, however, it is essential that a State not have any territorial or border problems.

It is very important for a single-State zone, like other zones, to have the support of nuclear weapon states and neighbouring States, since they would be affected by the terms of the zone and its implications.

The nuclear weapon states would be called upon to give negative and positive security assurances, while the neighbouring States would give assurances that they would respect the sovereignty, independence and inviolability of the single-State zone's borders. In order for the zone to be credible, it should have a simple but efficient verification regime, a mechanism to protect any nuclear materials and facilities, and a mechanism of consultation and exchange of information. The issue of transit and liability, among others, should also be addressed.

As to legal form, a State should spell out its commitment to be a single-State zone in an international agreement as well as in its internal legislation, such as its administrative, criminal and environmental laws. The international agreement would incorporate the commitments made by neighbouring States to respect it as a NWFZ. It would also include the negative security assurances offered by nuclear weapon states and a commitment not to contribute to any action that would in fact violate the status of the zone. In order to allow a thorough discussion of the concept and practice of establishing single-State zones, Mongolia introduced in the Disarmament Commission in April 1997, a working paper on the principles for establishing single-State zones in the hope that this could be done well before the year 2000.

Some Conclusions

The experience gained in the establishment of NWFZs demonstrates that, despite the specific traits and characteristics of each zone, all NWFZs share similar objectives. Thus it is possible to draw some practical recommendations and guidelines for future NWFZs.

The existing NWFZs were created in a generally favourable geopolitical environment with no major political problems among their parties. What is lacking in the proposed NWFZs is the favourable geopolitical environment and political will of all States of the proposed zones.

Further study is needed on two topics: the principles that the establishment of NWFZs should not adversely affect existing regional or international security arrangements and that a NWFZ in a defined geographical region could be established only when all the States of the regions participate in the treaty.

The prospects of establishing a NWFZ in Central Asia, compared to the other proposed zones, are promising, though the recent moves of NATO to expand eastward could raise some issues. The international community should support the efforts of the States of this subregion in establishing the zone.

The concept of a single-State zone is in its very early stage. Mongolia's experience so far underlines the importance of creating an international legal basis for its zone, otherwise it would become a mere declaration of good intention. Elaboration of the guidelines for establishing such zones could encourage States to establish single-State zones as a means of strengthening their security and enhancing confidence and stability in the region.

**INTERNATIONAL CONFERENCE ON A NUCLEAR WEAPON
FREE ZONE IN CENTRAL ASIA, 15-16 SEPTEMBER 1997
TASHKENT, UZBEKISTAN**

Building as Integral Part of the Global Nuclear Security System

This Conference is the first fruit of the joint effort by the Central Asian States to counter external threats and challenges. The decision to declare Central Asia a nuclear weapon free zone is a further manifestation of the Central Asian States' shared interest in ensuring security, stability and peace for all the inhabitants of the region and in creating the necessary—indeed, the essential—conditions for its sustainable development and prosperity.

Allow me to express my thanks to the international organisations, and particularly the United Nations, the Organisation for Security and Cooperation in Europe, the International Atomic Energy Agency and the Organisation of the Islamic Conference, and to the representatives of more than 50 States and international bodies, for their support for the Central Asian initiative and their assistance in the preparation of the Tashkent Conference.

We are greatly heartened by the participation in the work of the Conference of representatives of the five nuclear Powers, the permanent members of the Security Council.

I welcome the official representatives of the countries bordering on the Central Asian region, who considered it their duty to support the idea of creating a nuclear weapon free zone in Central Asia and came to Tashkent to participate in the Conference.

We are glad to see among those participating in the Tashkent Conference delegations from the European Union countries, whose experience in integrating and building a safer world is especially valuable to the young Central Asian democracies.

I note with satisfaction that the number of international partners on Central Asian security issues has steadily increased. I am firmly

convinced that participation by Latin American and South African diplomats will give our Conference even more weight and substance.

I should also like to stress the quality of the scientific participation in our Conference, which is graced by the presence of leading international experts on nuclear non-proliferation. Many of them came to Tashkent for the preparatory stage of the Conference.

I should like to express particular gratitude to the media, which have provided excellent coverage of the important task of preparing for the Conference.

Many thanks to all those who responded to our appeal and are now participating in the consideration of our initiative to declare Central Asia a nuclear weapon free zone.

The twentieth century is coming to an end in the lives of nations and of all humanity. I am certain that every intelligent person living in the world today has given some thought to how we will enter the twenty-first century and how we can achieve peace and stability in our own homes, countries and regions. How can we counter the real threat of tragic disasters, loss of life on a vast scale and irreparable cataclysms?

And, of course, one of the greatest threats is posed by nuclear weapons and other weapons of mass destruction.

It has become a commonplace today to say that there are thousands of nuclear weapons stockpiled around the world. Sadly, it is a normal, everyday occurrence to learn from the democratic press about huge stocks of fissile materials, accidents caused by nuclear weapons, the smuggling of nuclear weapons or the dangers of nuclear blackmail and terrorism that together pose a real threat to the survival of humanity.

We are getting used to the terrible pictures that we see on television showing the thousands upon thousands, or even millions, of hectares of once fertile land, flora and fauna that have been destroyed forever as a result of nuclear weapon tests.

The people of Central Asia are suffering to this day and will continue suffering for many generations the irreparable consequences of such inhuman—I would even say anti-human—testing of weapons of mass destruction.

The urgency and the importance of the task before us in declaring our region a nuclear weapon free zone are further underlined by the fact that not all States have joined the Non-Proliferation Treaty.

There are still some States on our very doorstep that have openly declared their desire to acquire nuclear weapons.

That is why it is so essential, we believe, that all activities that serve to remind us of this threat—all the initiatives and measures aimed at preventing this threat— should enjoy the full attention and support of the international community.

We should always remember that Central Asia has some of the most densely populated areas of the world, where the people live in pockets of land that are vulnerable in every respect, susceptible to all kinds of natural disasters even without the nuclear threat.

On the other hand, the significance of this initiative lies in the growing geostrategic importance of Central Asia, with its vast natural, mineral, energy, human and other resources, located at a point where the geopolitical and strategic interests of many of the world's largest States coincide. That is why this region, which is becoming ever more important, must not be allowed to become a battleground in the struggle for new spheres of influence and domination.

It is our firm conviction that only the active integration of the Central Asian region into the world economic and information system, as well as closer whole question of survival, political cooperation with the world's leading nations and international institutions and, above all, the integration of the States of the region into a comprehensive system of international security, can provide a reliable guarantee of stability and sustainable growth.

The increasing importance of Central Asia in the global context also calls for a new understanding of the common European security system. We firmly believe that the establishment of a nuclear weapon free zone in the Central Asian region, bringing together the five States in the region that are members of the Organisation for Security and Cooperation in Europe (OSCE), will further strengthen the basis for peace and stability within the whole vast area covered by OSCE.

The advisability—the overwhelming importance— from an objective point of view of establishing a nuclear weapon free zone in Central Asia is underlined by the fact, which I am delighted to note, that this initiative by Uzbekistan, put forward at the forty-eighth session of the United Nations General Assembly, is wholeheartedly supported by our neighbours—Kazakhstan, Kyrgyzstan, Tajikistan and Turkmenistan—as is demonstrated by the Almaty Declaration, adopted in February 1997. This document has created an atmosphere of political

trust with regard to nuclear non-proliferation. The transmission of the Declaration to the United Nations and other international bodies and its reception by the international community and its leaders are encouraging.

The Central Asian initiative was made possible by a careful study of international experience in the field of non-proliferation and by an understanding of our own role in strengthening global security. This was confirmed by the work of the experts during the preparatory stage of the Conference, during which appreciation was expressed for the efforts by the States of the region to extend the areas of the world where nuclear weapons and nuclear explosive devices will be banned forever.

I am confident that with such an impressive standard of participation in our Conference we shall be able to bring a high degree of expertise to the discussion of the issues before us.

I should like to take this opportunity to draw your attention to how we see the conceptual aspects of the Conference agenda.

First, nuclear security should be seen as an integral part of universal security and of the whole question of survival. Finding the right balance between the obligations of nuclear and of non-nuclear States is the basis on which a nuclear weapon free zone can function properly.

It is my profound conviction that a nuclear weapon free zone can only function properly in Central Asia if all the nuclear Powers recognize its status. On the other hand, in the context of global nuclear strategy such a zone should not be seen as a factor that might upset the balance of power existing in the world today.

Second, it must be acknowledged that the technical establishment of a nuclear weapon free zone will not of itself solve the problem of ensuring security in the region. We must work out a mechanism whereby all the functional capacities of the nuclear weapon free zone can be brought into play to prevent the threat of proliferation. To that end the participating States should take advantage of international experience, from which a number of basic principles have emerged:

- The zone must be totally free of nuclear weapons;
- Not only the participating States, but all interested countries, must make a commitment to its proper functioning;
- The agreement on the creation of a nuclear weapon free zone should include an effective control system to ensure that the agreed commitments are honoured;

- Such control should be implemented on the basis of IAEA safeguards and guarantees by the United Nations Security Council.

Third, the establishment and functioning of the nuclear weapon free zone in Central Asia is an integral part of the global nuclear security system, as defined by the Non-Proliferation Treaty. In practice this means that the participating States of the Central Asian region would be actively joining the universal regime of nuclear non-proliferation and disarmament.

At the same time, alongside measures aimed at nuclear disarmament, efforts should be made to prevent the proliferation of other weapons of mass destruction as well. Such efforts should include consultations, the mutual exchange of information and notification about existing weapons stockpiles and measures to set up strict control mechanisms governing arms supplies to areas of local conflict.

Fourth, any political decision, any intergovernmental agreement is only worth anything if it is closely linked with social issues—with the provision of decent living standards for individuals and society. The nuclear weapon free zone in Central Asia is no exception to that principle. What real benefits can it provide? First and foremost, it will be a contribution to ensuring security and sustainable development; but also the international community must give its urgent attention to a speedy solution of the problems involved in overcoming the extremely harmful nuclear heritage left by the former Soviet Union.

This includes the consequences of nuclear tests carried out at the Semipalatinsk test site. It also includes the dozens of uranium mines that have been temporarily sealed and the dumps and the waste resulting from intensive mining in the past, which are harmful to human life. Lastly, it includes the environment, public health and living conditions.

My fifth point is that, as the expert phase of the preparations for this Conference demonstrated, the idea of establishing a nuclear weapon free zone in Central Asia is fully consistent with measures to ensure security in the region. It is a logical extension of earlier efforts to deal with the issue.

To sum up, I should like to draw your attention to an issue that is of vital importance. We are well aware that the establishment of a nuclear weapon free zone in Central Asia must not end up as some kind of symbolic gesture. The zone should be established in accordance with the norms of international law in the field of disarmament and arms control, within the framework of the Non-Proliferation Treaty.

The functioning of the nuclear weapon free zone must be viewed more broadly than has traditionally been the case.

What do I mean by that?

First of all, we must work out a precise and efficient mechanism for physical protection against the fissionable materials already in the possession of the countries of the region and neighbouring countries.

We also have no guarantees against any form of terrorism or provocation. We have no guarantees that dangerous raw materials that could be converted at any moment into nuclear warheads will not be introduced into our countries. At the inter-State level it is essential that we should coordinate the activities of our diplomats and of our State and law-enforcement agencies. We must take specific measures to activate and increase cooperation in the storage, control and inventory of nuclear materials and in ensuring their security.

Lastly, apart from performing functions relating to non-proliferation, nuclear disarmament, control and environmental protection, the nuclear weapon free zone should promote cooperation among the Central Asian States in atomic research for peace. The region has all the necessary resources for this.

Our meeting in Tashkent is taking place in the year of the thirtieth anniversary of the Treaty of Tlatelolco, the first anniversary of the Treaty of Pelindaba and the fortieth anniversary of the founding of the International Atomic Energy Agency. We send our congratulations to the Agency for the Prohibition of Nuclear Weapons in Latin America and the Caribbean, to the participants in the African nuclear weapon free zone and to the IAEA, whose representatives have honoured our Conference with their presence. In that connection, I should like to assure you that we in Uzbekistan see the activities of those admirable organisations and States as a proof of their sincere aspiration to build a safer world.

There is a symbolic link between all these events, so I should like to express my satisfaction that the Central Asian States, with a full awareness of their responsibilities, have taken up the challenge of working for a world free from nuclear weapons, continuing the process that began in Latin America and that has advanced from one region to another.

Every Central Asian State is conscious of its own responsibility for the fate of the region. And we regard all those here in this room today as the delegated representatives of the world community, fully understanding and sharing our concern and ready to help us in our

aspiration to make the world a safer place and to achieve mutual understanding and cooperation. We are not cut off from all that occurs beyond the boundaries of Central Asia. We are part of humanity, and the world is interrelated and indivisible. We wish to take part in the peace-building process on an equal footing with other States so as to hasten the approach of a time when the safety of people living in every corner of the Earth can be assured.

I hope that our Conference will become an important milestone on the path to achieving this most desirable aim of working out a model for global security in the twenty-first century.

A STEP TOWARDS REGIONAL PEACE AND DEVELOPMENT

The idea of establishing a nuclear weapon free zone in Central Asia is a further step by the States of the region towards achieving secure peace in the world and the stable and steady development of the regional community.

We believe that the process of non-proliferation and nuclear disarmament is one of the most pressing problems of a global nature and scale. At the same time, threats and challenges which bear the seeds of conflict are today being shifted to the regional level; and regional problems taken as a whole are the new global reality.

In this regard, the need to establish a nuclear weapon free zone in Central Asia, dictated by the specific characteristics of the region and the nature and conditions of its development, reflects the general worldwide movement from regionalism to globalism.

The desire to declare Central Asia a nuclear weapon free zone is based on a number of major considerations.

First of all, it is a question of the region's geopolitical and geostrategic location. Central Asia is an area situated at the very heart of the Asian continent, at the crossroads between East and West. The political and economic interests of many countries intersect in its territory.

Secondly, it is necessary to take account of the threats posed to the region by large weapons stockpiles, the increase in drug trafficking, the ecological crisis, uncontrolled migration and organised crime.

Lastly, there are stocks of nuclear materials and a number of nuclear facilities in the region.

In view of all this, it may be asserted that, if unfavourable developments take place, the Central Asian region may become an explosive area giving rise to dangers of global proportions.

The political agreement on the idea of a nuclear weapon free zone expressed by the leaders of all five States of the region is an important demonstration of the fact that Central Asia is entering the twenty-first century united by the common regional objectives of achieving security and stability.

The process of establishing a nuclear weapon free zone in the Central Asian region is not a one-time political act. We understand this perfectly. This process must be carried out in accordance with the international experience that exists today in the field of non-proliferation and nuclear disarmament, together with mandatory and comprehensive consideration of the basic elements of the current international security system. The international agreements on non-proliferation, first of all, the Non-Proliferation Treaty, play a key role in this process.

A rejection of the proliferation of nuclear weapon the region cannot and must not be accompanied by any apprehensions concerning its political consequences for the security of the States in the zone. On the contrary, the non-nuclear choice can lead to potential benefits from further, deeper integration into the world market and international political and economic structures.

At the same time, there is a need to develop a reliable system of collective efforts by the participating States, which would include:

- effective measures ensuring the non-proliferation regime;
- a reliable system of arms control;
- ensuring the ecological safety of hazardous production facilities linked to nuclear raw materials;
- measures to prevent the diversion of nuclear technologies and materials.

The question of international safeguards is particularly important in the process of establishing a nuclear weapon free zone. The United Nations Security Council and the International Atomic Energy Agency (IAEA) are the two main international institutions that can provide them.

Nevertheless, as practice has shown, none of the existing international nuclear safeguards has obviated the possibility itself of the theft of fissile materials for prohibited purposes.

One should also take account of the fact that it is impossible to ensure comprehensive nuclear security in an artificial manner, separating it from transnational problems, namely, the dangers resulting from

local conflicts, the delivery of conventional weapons, illegal drug trafficking and organised crime.

In our view, there is an essential need to establish a more reliable system of international safeguards, which could organically combine efforts to ensure non-proliferation and global nuclear security with the settlement of regional problems. We welcome the efforts of IAEA, which recently adopted measures that can ensure more effective control.

In this connection, there is a need at the international level to accord priority to settling regional problems as a means to enable the world community to make a phased transition from secure and stable regions to global security; there must be a fundamental review of the security guarantees of non-nuclear weapon states, first of all, the members of nuclear weapon free zones; the question of non-proliferation should be considered in close linkage with the significant reduction of other types of weapons of mass destruction.

The Republic of Uzbekistan highly appreciates the role of the United Nations in solving the most important problems facing the entire world community. We are grateful for the support that it has already given to the Central Asian initiative.

In our view, in order to create a mechanism for carrying out that initiative, it is necessary to set up a United Nations group of experts. This group could focus its attention on the forms and elements necessary in preparing and implementing a regional agreement on the establishment of a nuclear weapon free zone in Central Asia. Representatives of States parties to existing treaties on the establishment of nuclear weapon free zones as well as the regional expert group that played a positive role during the preparations for this Conference could be invited to participate in the work of the group of experts.

We place great hope in the role to be played by the nuclear weapon states in implementing the Central Asian initiative. We consider those States reliable guarantors of the non-proliferation regime at the regional level. The dynamically developing integration process is the basis for collectively confronting external threats and challenges and achieving secure and sustainable development in the Central Asian region. The establishment of a nuclear weapon free zone in Central Asia has given our cooperation efforts further significance and substance.

It is exceptionally important that all five Central Asian States become parties to the international regional agreement that legally establishes the zone. In practice, this will mean that we have taken yet a further

set of positive measures aimed at ensuring regional security and reaffirming the commitment of the States parties to the principles of disarmament and the non-proliferation of nuclear weapons.

At the same time, the establishment of a nuclear weapon free zone is a long and multifaceted process. It will move forward stage by stage, making use of all the means at the disposal of the regional community in order to achieve the objective in mind. The process will be maintained through constructive cooperation and an atmosphere of mutual understanding and goodwill among our countries; and, we hope, it will enjoy reliable support on the part of the United Nations, the IAEA, the Organisation for Security and Cooperation in Europe, the Organisation of the Islamic Conference and the world community as a whole.

I am confident that the urgency and importance of the questions on the Conference's agenda will be fully understood by both those participating in it and broad sectors of international public opinion.

I hope that the results of our forum will make a concrete contribution to the noble task of ensuring the secure and stable development of the entire world community along the path towards achieving a world without war and conflict.

MESSAGE OF THE SECRETARY-GENERAL TO THE TASHKENT CONFERENCE

Message Delivered on 15 September 1997, Tashkent, Uzbekistan

The idea of establishing nuclear weapon free zones around the world has gained momentum. The principle of denuclearisation has been applied successfully in Latin America and the Caribbean, where earlier this year the Treaty of Tlatelolco celebrated its thirtieth anniversary; in the South Pacific, with the Treaty of Rarotonga; in Southeast Asia, with the Treaty of Bangkok; and with the Treaty of Pelindaba covering all of Africa.

More than 100 United Nations Member States are parties to these agreements with Antarctica included, they form a nuclear weapon free mantle over a vast, densely populated area of the southern hemisphere.

Notwithstanding the fact that each of these zones and agreements has its own regional characteristics and concerns, their experience and example will serve as guideposts for the establishment of nuclear weapon

free zones in other parts of the world. I encourage such efforts, which are now under way. Additional nuclear weapon free zones, if agreed to by the States of the region and other concerned States, would be a boon to regional security cooperation, would contribute to non-proliferation and disarmament and would represent a further step in the direction of a nuclear free world.

I am aware that governments in Central Asia, guided by their desire for political interaction and cooperation, have begun efforts to promote the creation of a nuclear weapon free zone in this region. In this connection, I welcome the initiative that led to the signing of the Almaty Declaration.

The elimination of nuclear weapons, a goal shared by all humanity, is a feasible long-range objective. The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) represents the single most important effort of the international community in this direction. The indefinite extension of the NPT, and last year's adoption by the United Nations General Assembly of the Comprehensive Nuclear-Test-Ban Treaty, have strengthened considerably the nuclear non-proliferation regime.

Still, uncertainties and serious challenges remain, in both the nuclear and conventional fields, and a new international security agenda must be agreed that takes account of our rapidly changing world. Towards these ends, I offer you my best wishes for the success of your deliberations.

COMMON CONCERNS, COMMON INTERESTS: BUILDING REGIONAL STABILITY, PEACE AND PROSPERITY

The Russian Federation attaches great importance to the initiative of the President of Uzbekistan, Islam Abduganievich Karimov, of convening in Tashkent such a representative international forum to discuss the initiative by the leaders of the five Central Asian States of transforming Central Asia into a nuclear weapon free zone. Representatives of nuclear Powers, and also of influential international organisations— the United Nations, the Organisation for Security and Cooperation in Europe, the International Atomic Energy Agency and the Organisation of the Islamic Conference— travelled to Tashkent. In a word, a quorum was convened for ensuring comprehensive and constructive study of the idea of establishing a nuclear free zone in a region of the planet that is of vital importance from all points of view.

The positive reaction of the international community to the initiative of the Central Asian States affords yet further evidence of their growing influence in the world. It was symbolic that Tashkent was the venue for the holding of the Conference. Over the comparatively short time it has existed as an independent State, Uzbekistan, under the leadership of President Karimov, has played an active role in world affairs, stating its positions with confidence. Its constructive foreign policy is universally acknowledged. Uzbekistan's views are taken into consideration, and its opinions have weight on all topical issues of international politics, especially those relating to the problems of the Central Asian region.

The Russian Federation regards the initiative put forward by the presidents of the five central Asian States for the establishment of a nuclear weapon free zone as yet further evidence of their desire to promote a strengthening of the nuclear non-proliferation regime, contribute to nuclear disarmament and promote the establishment of a higher level of trust and stability not only in Central Asia, but throughout the world.

The Russian Federation is making constant efforts in the same direction. Suffice it to recall the agreements we have reached, together with our partners in Central Asia and China, on strengthening confidence along our common borders. As a result, it has been possible to create a qualitatively new situation of mutual trust, predictability and stability which, in the words of the President of the Russian Federation, Boris Yeltsin, is a necessary prerequisite and a condition not only for transforming our border into a zone of peace and cooperation, but also a guarantee of the further strengthening of friendly relations and partnership between our countries.

Central Asia is a region with which the Russian Federation is linked by a common history, a multiplicity of political, economic and cultural ties and agreements aimed at ensuring the security of our countries. In other words, this is a region of our common concerns and our common interests, principal among them stability, peace and prosperity for the Central Asian peoples and their neighbours, including, of course, the Russian Federation.

The efforts of the five States to free their territories forever from nuclear weapons reflect the search they are engaged in for more effective ways of freeing mankind from the threat of nuclear conflict. The Russian Federation is prepared to cooperate comprehensively with them in this area on the basis of a common vision of the contours of the new

world order that is replacing confrontation between blocs. That coincides with a fundamental aspect of Russian foreign policy, that of promoting the construction of a multipolar world.

Our position of principle regarding nuclear weapon free zones remains unchanged. We support the desire of States to promote the strengthening of the nuclear non-proliferation regime in their regions through additional measures that would reliably guarantee their truly nuclear free status. We take the same approach to the idea of a nuclear weapon free zone in Central Asia. We also take into account the important fact that all five countries behind this idea have acceded to the Treaty on the Non-Proliferation of Nuclear Weapons and have already assumed firm and unambiguous obligations never to acquire or to construct nuclear weapons. Thus, the key elements of a nuclear free zone are to a certain extent already present, thanks to the responsible and far-sighted policy of the leadership of the five Central Asian States.

A good deal of experience in the establishment of nuclear weapon free zones has been accumulated in the world. They have been established in Latin America, Africa and the South Pacific. In those regions, all the necessary procedures have been completed and all the agreements have been drawn up both among the participants in the zones themselves and with the nuclear Powers as regards respect for the nuclear free status of these regions, and they have been given additional guarantees of the non-use of nuclear weapons.

Naturally, not everything went smoothly; a long, multi faceted and at times difficult dialogue was conducted with a view to taking into account all the elements of the zones to be established, including their geographical boundaries, their concrete limitations and the nature of the relationships between the participating States and other countries. What is important is that, ultimately, understanding was reached on all of these issues.

In Southeast Asia a process of this kind is still going on, and a number of issues also exist whose joint resolution by the countries forming part of the nuclear free zone and the nuclear Powers will in the final analysis determine whether the agreement between the countries of Southeast Asia that has already been announced and has formally entered into force will become a strong instrument of non-proliferation that is respected and observed by the other States of the world.

In the context of establishing a nuclear free zone the Central Asian countries have a good deal to do in order to ensure that agreement is

reached on the concrete objectives and additional obligations the States are ready to assume in this connection. There are a good number of other questions that need to, be answered. The work of doing so will not be easy, but the objective set is a noble one, and we are sure that both the nuclear States and international organisations will actively promote the attainment of agreed decisions.

I should like to emphasise once again that Central Asia and the problems associated with this region are among the priorities of Russian foreign policy. It would not be an exaggeration to say that we are extremely sympathetic towards the hopes and aspirations of the peoples and governments of the Central Asian States, and herein lies a guarantee that the Russian Federation's policy of strengthening friendship, mutual understanding and cooperation with these States will continue unchanged.

This approach is fully consistent with the Russian Federation's strategic policy of comprehensively developing relations of friendship and mutually advantageous partnership with all the countries members of the Commonwealth of Independent States. A good deal has been done in this respect; a political dialogue is under way and the prospects for trade and economic links are increasing. One of the most important achievements, in our view, is the Treaty on Collective Security, and we intend to implement fully the obligations we have assumed under it. We believe that the joint efforts related to issues of strengthening international peace and security— which, as we understand it, is also the aim of establishing a nuclear free zone in Central Asia—will also be conducive to the strengthening of the Commonwealth.

PRINCIPLES FOR THE ESTABLISHMENT OF NEW ZONES

China has always respected and supported nuclear weapon free zones and has unconditionally undertaken not to use or threaten to use nuclear weapons against non-nuclear weapon states and nuclear weapon free zones. On the basis of this position, China has signed and ratified the relevant protocols of the Treaty for the Prohibition of Nuclear Weapons in Latin America and the Caribbean, the South Pacific Nuclear Free Zone Treaty and the African Nuclear Weapon Free Zone Treaty.

As a neighbour of Central Asia, China has enjoyed a good cooperative relationship with the five Central Asian countries. It appreciates and supports their efforts to establish a Central Asian nuclear weapon free zone with a view to promoting regional peace and security. It stands ready to work tirelessly with all countries, including the five Central

Asian nations, for the maintenance of world peace and security and for the ultimate attainment of a total ban on and the thorough destruction of nuclear weapons.

The establishment of nuclear weapon free zones is of great significance for the advancement of nuclear disarmament, the prevention of nuclear proliferation and the promotion of international and regional peace and security. To this end, we believe that the following principles should be observed with regard to nuclear weapon free zones:

1. Nuclear Weapon Free zones should be established by the countries concerned in the light of the realities of their region on the basis of mutual consultation and voluntary agreement.
2. Treaties on nuclear weapon free zones should be consistent with the purposes and principles of the Charter of the United Nations and should not lead to interference in the internal affairs of countries outside the region.
3. The nuclear free status of nuclear weapon free zones should not be subject to the influence of any other security mechanism. Countries in nuclear weapon free zones should not use any pretext, including that of a military alliance, to refrain from fulfilling their obligations.
4. A nuclear weapon free zone should have clear geographical boundaries. It should not include continental shelves, exclusive economic zones or areas where disputes over territorial sovereignty or maritime rights and interests exist between the parties to the nuclear weapon free zone treaty and neighbouring countries.
5. Effective verification mechanisms, including International Atomic Energy Agency (IAEA) safeguards, should be established in nuclear weapon free zones to effectively prevent the proliferation of nuclear weapons.
6. The disposition of nuclear weapon free zones should be conducive to international cooperation among member States in the peaceful use of nuclear energy with a view to promoting their economic, scientific and technological development.
7. Nuclear Weapon States should respect the status of nuclear weapon free zones, undertake the corresponding obligations and commit themselves unconditionally not to use or threaten to use nuclear weapons against nuclear weapon free zones.

We believe that the aforementioned principles will contribute positively to the consolidation of existing nuclear weapon free zones and the establishment of new ones.

There is a saying in Chinese that goes, "A journey of a thousand miles begins with a single step". I believe that this Conference will lay a solid foundation for the establishment of a nuclear weapon free zone in Central Asia.



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