
**Verification of
Current Disarmament
and Arms Limitation
Agreements**

Ways, Means and Practices

Edited by Serge Sur

**VERIFICATION OF CURRENT DISARMAMENT
AND ARMS LIMITATION AGREEMENTS**

UNIDIR

United Nations Institute for Disarmament Research Institut des Nations Unies pour la Recherche sur le Désarmement

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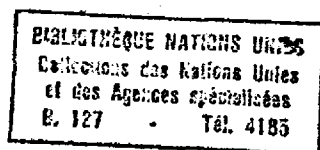
Verification of Current Disarmament and Arms Limitation Agreements: Ways, Means and Practices

Serge Sur
Editor

UNIDIR
United Nations Institute for Disarmament Research

Dartmouth

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Preface

An important facet of the dramatic progress in disarmament negotiations in the last few years is the remarkable consensus achieved on the hitherto contentious issue of verification. It is both a product of the positive transformation of the super-power relationship from Cold War confrontation to co-operation, as well as a confidence- and security-building measure buttressing this transformation and auguring well for international peace and security.

Progress in verification in the bilateral US-USSR context has a profound influence on verification of multilateral agreements. The Disarmament Commission's consensus on verification principles and the United Nations study on the role of the United Nations in verification reflect this. In the past reliance on National Technical Means of verification inevitably placed some states at an advantage over others. Following the important concession of the principle of on-site inspection and greater transparency, more states can now participate in the verification process thereby encouraging the process of multilateral negotiation of disarmament agreements.

In recognition of these important developments UNIDIR has initiated several research projects on verification. A number of research reports and papers have already been published and the March 1990 issue of the *UNIDIR Newsletter* focused on the same subject.

This research project was undertaken in order to evaluate the verification procedures and practices in existing arms limitation and disarmament agreements. If the international community is to devise new verification arrangements for the future it has to do so on the foundation of past experience. This publication, containing a detailed analysis of a number of agreements and instruments concluded over a period of 60 years, represents the work of a group of eminent scholars in their individual capacities.

Three meetings of the group of experts were held during the research process (1989-90), in Yalta, Sofia and Geneva. These meetings were hosted by the authorities of the Soviet Union, Bulgaria and Switzerland respectively and I would like to take this opportunity to thank them for their generous and unstinting hospitality.

The research project and this report were co-ordinated and edited by UNIDIR's Deputy Director, Professor Serge Sur. UNIDIR researchers have complemented these valuable contributions by providing the general framework and context, as well as by drawing together the various strands of the discussion. I would like to thank all those who were associated with this research project.

The views expressed by the various authors are their own and not necessarily those of UNIDIR. However UNIDIR is convinced that this publication will make an important contribution to the discussion of the important issue of verification and, consequently, we commend this report to the attention of its readers.

Jayantha Dhanapala
Director, UNIDIR

List of Acronyms

ABM	Anti-Ballistic Missile
ASAT	Anti-Satellite
ASBM	Air-to-Surface Ballistic Missile
BCC	Bilateral Consultative Commission
BWC	Biological Weapons Convention
CD	Conference on Disarmament
CDE	Conference on Confidence- and Security-Building Measures and Disarmament in Europe
CFE	Negotiations on Conventional Armed Forces in Europe
CORRTEX	Continuous Reflectometry for Radius versus Time Experiment
CSCE	Conference on Security and Cooperation in Europe
CTBT	Comprehensive Test Ban Treaty
ENMOD	Environmental Modification
GLBM	Ground-Launched Ballistic Missile
GPS	Global Positioning System
IAEA	International Atomic Energy Agency
ICBM	Intercontinental Ballistic Missile
INF	Intermediate-Range Nuclear Forces
JCC	Joint Consultative Commission
JVE	Joint Verification Experiment
MIRV	Multiple Independently-Targetable Re-Entry Vehicle
NDDS	Nuclear Detonation Detection System
NNA	Neutral and Non-Aligned Countries
NPT	Non-Proliferation Treaty
NTM	National Technical Means
OPANAL	Organismo para la Proscripcion de las Armas Nucleares en la Americana Latina
OSI	On Site Inspection
OSIA	On Site Inspection Agency
OTA	Office of Technology Assessment
PNET	Peaceful Nuclear Explosions Treaty
PTBT	Partial Test Ban Treaty

SALT	Strategic Arms Limitation Talks
SC	Security Council
SCC	Standing Consultative Commission
SDI	Strategic Defence Initiative
SLBM	Sea-Launched Ballistic Missile
START	Strategic Arms Reduction Talks
SVC	Special Verification Commission
TTBT	Threshold Test Ban Treaty
UN	United Nations
UNGA	United Nations General Assembly

Introduction

Increasing attention is being paid to verification in the area of disarmament and arms limitation, as is amply demonstrated by the bibliography annexed herewith. The subject commands the attention of both negotiators and researchers, the former since it is a central theme of the agreements - bilateral, regional and multilateral - at present being negotiated; and the latter because new prospects for verification are thought-provoking and involve techniques to be used, procedures to be developed and the impact of the political changes stemming from the development of the process. In this respect, recent progress clearly owes much to the climate of frankness and confidence prevailing within the new framework of international relations, and particularly in East-West relations - assuming that this conventional distinction still has any meaning.

UNIDIR has for several years been carrying out a research programme covering various aspects of verification. Different national positions and their evolution, available new technologies, current negotiations and the role of international organizations were some of the topics studied.

* * *

In that context, this book has a specific purpose. It is not intended as an attempt to define *multifunctional verification machinery* applicable to all situations - not that this would have been without interest. For example, in 1988 the United Nations Commission on Disarmament formulated 16 verification principles which described current practices and also attempted to lay down standards of conduct for the future. Quite recently, a group of governmental experts carried out a study, at the request of the General Assembly, on ways of increasing and strengthening the role of the United Nations in the verification process.

However, it must also be emphasized that verification is by no means something new. It has always, explicitly or implicitly, been at the heart of disarmament or arms limitation agreements, which are numerous and varied. The provisions they contain concerning their verification are just as numerous and complex. The balance sheet of existing verification procedures (reflecting not only written procedures but also, as far as possible, practices developed on the basis of such procedures) is already impressive.

The major part of this book therefore focuses on this balance sheet and endeavours to analyse and evaluate current procedures and practices, to determine whether they meet the needs of the instruments in question and whether they are satisfactory to the parties, as well as to detect their shortcomings and possibly suggest how they can be improved. An attempt can thus be made to determine in what way the experience acquired in the field of verification is useful and which lessons, positive as well as negative, can be drawn from it. A similar attempt can be made to identify major trends, more rapid changes and remaining problems.

* * *

The book is divided into three parts that differ in length and importance.

The *first part*, prepared under the responsibility of the UNIDIR co-ordinator, is intended to provide a general framework for analytical purposes. To this end, it presents general comments about verification, its definition and its functions, and offers a general description of the various treaties and instruments covered by the study.

These instruments - from the 1925 Geneva Protocol on the prohibition of chemical and biological weapons to the 1990 Protocols on the verification of United States-Soviet treaties on the partial prohibition of underground nuclear tests - cover a period of over 60 years. Hence some 20 agreements have to be retained for the purpose of this book. They concern very divergent weapon systems, cover various areas and entail very different prohibition or limitation methods. The extent to which their verification procedures have been developed also varies considerably; in some cases they contain absolutely no provisions on the subject, as in the Geneva Protocol, whereas in others such provisions are comprehensive and precise, as in the case of the INF Treaty, with a well-developed on-site inspection regime.

The *second part*, which is the most important, constitutes the heart of the book and consists of a series of monographs, each of which comprises a separate chapter. These monographs were prepared by Members of the Group of Experts set up by UNIDIR and their content remains the responsibility of their respective authors.

A few words are in order about the general nature of this part.

In the first place, the diversity of the agreements under review, their interdependence and the variety of their verification provisions called for the use of an analytical approach. Indeed, an artificial distinction would have been made had treaties been grouped on the basis of certain characteristics, depending on whether they were bilateral, regional or multilateral or whether they dealt with nuclear matters, chemical and biological weapons or conventional armaments. For in point of fact each treaty or instrument, depending on its content, the circumstances surrounding its adoption and the parties to it, gives rise to a specific regime which should be examined independently.

Some exceptions have nevertheless been made to this principle owing to the proximity of instruments. This is the case of the Partial Test Ban Treaties (1963, 1974, 1976 and the 1990 Protocols), the Outer Space and Moon Treaties (1967 and 1979) and the SALT Agreements (1972 and 1979 - the last one never entered into force and is no longer applied, even on a unilateral basis).

The extent to which the subjects of these monographs have been developed also varies. This is due to the relative importance of verification procedures in the corresponding instruments and to their scope and precision. It is also due to the degree to which they have been applied and the amount of information available about their application. In many cases, more information would have been welcomed but was not available. Indeed the parties do not readily publicize the results of their observations and conclusions. This "application" covers not only the implementation of procedures

but also the views of the parties on the subject and even suggestions for the improvement of such procedures.

Lastly it should be emphasized that it seemed both pointless and impossible to embark upon an examination of specific verification techniques such as the following: the capacity and technology of individual satellites, the accuracy of information obtained by remote sensing, the sensitivity of seismographs, the enumeration of instruments used for on-site inspection, the desirable technical or scientific training to be required of inspectors, and conditions in which a certain type of apparatus could be used.

These points are undoubtedly of great importance and should not be ignored. Yet their examination falls into another context. Their inclusion would imply the participation of scientific experts specialized in various disciplines and to a great extent would be useful for these same experts. Moreover, and more importantly, these techniques can be used in connection with activities other than the verification of disarmament or arms limitation agreements, such as monitoring for military intelligence purposes or the identification of potential targets. In that respect it exceeds the scope of this book.

Consolidated tables prepared by a UNIDIR researcher recapitulating the various procedures used to verify the commitments assumed under the treaties or instruments in question have been annexed to the first part as well as to each of the chapters comprising the second part. A brief description of the classification criteria used is annexed to part one. It is clear that the value of these tables is closely linked with the criteria used for the purpose of this book and should not be considered in isolation. These criteria reflect the level and type of analysis as well as the need to determine elements which are common to all the treaties and legal instruments studied. Annexes to chapters of the second part also contain a select bibliography, the text of the relevant articles outlining the main obligations of the agreements and their verification provisions, as well as the list of parties to the treaties and agreements.

The *third part*, which serves as a conclusion, summarizes what transpired at the round table of experts organized by UNIDIR. This consolidated summary helps to counterbalance the dispersion that inevitably results from the analytical method. It represents an attempt to draw up an overall balance sheet of how existing agreements are being verified and raises questions concerning the prospects for verification and possible methods of strengthening the process. Written by the UNIDIR co-ordinator and under his responsibility, it is intended to reflect the main points made by the experts.

* * *

In view of the scope and diversity of the questions examined, it was considered desirable to call upon the services of experts representing various points of view - as balanced as possible - as well as various disciplines. For this reason, UNIDIR set up a Group of Experts who participated in their respective personal capacities, comprising

diplomats, academics and specialized researchers. Some were jurists, others were specialists in strategic and military matters and yet others were international officials; some had previous practical experience with disarmament negotiations. In certain cases participants possessed more than one of these qualifications.

As indicated above, at times the experts worked individually and at other times collectively. The general method of work, as well as the structure of the study, were decided upon by the Group. Each expert first prepared an analysis of each treaty or instrument individually; their ideas were then discussed by the Group as a whole before the final text was drawn up. However each author assumes responsibility for his own study. Lastly, the Group participated in a round table discussion at which the conclusions set out in the third part were drawn up.

UNIDIR wishes to express its gratitude to the following experts who contributed to the realization of this research project: Ednan Agaev (USSR), Anguel Anastassov (Bulgaria), Adolf von Baeckmann (International Atomic Energy Agency), Frank R. Cleminson (Canada), Gilles Cottereau (France), Du Shuhua (China), Miguel Estrada-Oyuela (Argentina), Trevor Findlay (Australia), Jozef Goldblat (Sweden), Henny van der Graaf (Netherlands), Andrzej Karkoszka (Poland), Michail Kokeev (USSR), Ahmed Mahiou (Algeria), Ellis Morris (Canada), William C. Potter (USA), Jaskarajan S. Teja (India).

The author of this introduction is also responsible for the co-ordination of research and studies carried out by the above-mentioned group of experts. The tables and accompanying explanatory comments have been compiled and written by Chantal de Jonge Oudraat, UNIDIR Research Associate.

Serge Sur

Annexe

Reference Materials

A *bibliography* of recent publications in the field of verification is contained in:

UNIDIR Newsletter (Verification of Disarmament Agreements, Research Projects and Publications), Vol. 3, No. 1, March 1990, pp. 21-26. The Newsletter also contains *articles* on the state of research in the field and information on *research projects* currently being undertaken in different research institutes in various countries.

For a *regular update* on new developments in the field of verification, reference should be made to:

Trust and Verify, a monthly bulletin published by The Verification Technology Centre in London, UK.

The Canadian Ministry for External Affairs and International Trade regularly publishes studies and reports on verification. Particularly interesting are its *reference materials*:

Compendium of Arms Control Verification Proposals, Second Edition, 1982.

Quantitative Overview of the Second Edition of the Compendium of Arms Control Verification Proposals, 1983.

Compendium of Arms Control Verification Proposals, Third Edition, 1987.

Compendium of Verbatim Statements on Verification from the Conference on Disarmament and Its Predecessors, 1962-1984 (1987).

Compendium of Verbatim Statements on Verification from the Conference on Disarmament, 1985-1987 (1987).

Compendium of Verbatim Statements on Verification from the Conference on Disarmament, 1987-1990.

Texts of the Agreements and Instruments here examined can be found in:

UNITED NATIONS, *Status of Multilateral Arms Regulation and Disarmament Agreements*, New York, United Nations, 1987, 3rd edition, 190 p.

GOLDBLAT, Jozef, *Agreements for Arms Control: A Critical Survey*, London, Taylor and Francis, 1982, (a SIPRI publication).

THIERRY, Hubert, *Droit et Relations Internationales, Traités, Résolutions, Jurisprudence*, Paris, Montchrestien, 1984, 696 p. (contains only the Multilateral treaties).

General Books on Verification

A great number of *collective works* have recently been published. Amongst some of these publications which cover the whole range of verification issues the following can be mentioned:

ALTMANN, Jürgen and ROTBLAT, Joseph (eds.), *Verification of Arms Reductions, Nuclear, Conventional and Chemical*, Berlin/Heidelberg/New York, Springer-Verlag, 1989/1990, 244 p.

BRAUCH, Hans Günter, (ed.), *Verification and Arms Control - Implications for European Security. The results of the Sixth AFES-PRESS Conference. Part I: Abstracts and Discussions; Part II: Selected Papers*, Mosbach, AFES-PRESS, 1990, 224 p. and 214 p. (AFES-PRESS Reports No. 35 and 36). Also contains a selective bibliography.

GRIN, John and GRAAF, Henny van der (eds.), *Unconventional Approaches to Conventional Arms Control Verification - An Exploratory Assessment*, Amsterdam/New York, VU University Press/St. Martin's Press, October 1990.

GUILHAUDIS, Jean-François and FONTANEL, JACQUES (eds.), "Course aux armements et désarmement : la vérification du désarmement", *Arès*, Vol. XI, 1989-1, pp. 13-73.

KOKOSKI, Richard and KOULIK, Sergey (eds.), *Verification of Conventional Arms Control in Europe: Technological Constraints and Opportunities*, Boulder, Westview Press, 1990, 322 p.

The United Nations and Verification

As far as the United Nations and verification is concerned, the following documents should be consulted:

The Final Document of the First Special Session on Disarmament of the UN General Assembly (SSOD I) (23 May - 1 July 1978, New York) (Resolution A/S-10/2, paragraph 31, 91 and 92).

During SSOD I proposals on verification were submitted by:

Netherlands (A/AC.187/108); Sri Lanka (A/S-10/AC.1/9); France (A/S-10/AC.1/7); Federal Republic of Germany (A/S-10/AC.1/12); Austria (A/AC.187/101).

The French proposal to set up an *International Satellite Monitoring Agency* was later the subject of a study by the UN Secretary General and submitted to SSOD II (see A/AC.206/14 (1982) and A/38/404 (1983)).

In 1985, at the initiative of Canada, resolution 40/152 *O Verification in all its aspects* was adopted.

It requested to submit the Secretary-General a report containing the views of member States on various aspects of verification (see A/41/422 and Add.1-2 (1986)). See also the compilation of views from member States prepared by the Secretary-General for the 1987 and 1988 sessions of the Disarmament Commission (A/CN.10/87 and Add.1-2; A/CN.10/106 and Add.1-3).

General Assembly resolutions 41/86 *Q* of 4 December 1986 and 42/42 *F* of 3 November 1987 - *Verification in all its aspects* requested the *Disarmament Commission* to consider the issue. For the Commission's report and its *list of 16 principles of verification* - adopted in 1988 - see UN Document A/S-15/3. (See also the Commission's report to the 43rd General Assembly, A/43/42).

During SSOD III, four proposals were submitted with respect to verification: Argentina, Greece, India, Mexico, Sweden and Tanzania (A/S-15/AC.1/1); Canada and the Netherlands (A/S-15/25); France (A/S-15/34); and Bulgaria, Czechoslovakia and the USSR (A/S-15/AC.1/15).

The regular 1988 General Assembly session adopted resolution 43/81 *B* (7 December 1988) by which the Secretary-General - with the assistance of a group of qualified governmental experts - was requested to undertake an in-depth *study of the role of the United Nations in the field of verification* that would: (a) identify and review existing activities of the United Nations in the field of verification of arms limitation and disarmament; (b) assess the need for improvements in existing activities as well as explore and identify possible additional activities, taking into account organizational, technical, operational, legal and financial aspects; and (c) provide specific recommendations for future action by the United Nations in this context.

The report was submitted to the forty-fifth session of the General Assembly (A/45/372, 28 August 1990).

On the Secretary-General's investigative role in connection with the alleged use of CW and BW, see General Assembly resolution 37/98 *D* of 3 December 1982, concerning provisional procedures to uphold the authority of the 1925 Geneva Protocol.

Following this resolution a group of qualified experts was established to develop technical guidelines and procedures available to the UN Secretary-General for the timely and efficient investigation of reports concerning possible use of chemical and bacteriological (biological) weapons or toxin weapons that may constitute a violation of the 1925 Geneva Protocol or other relevant rules of customary international law. See UN document A/39/688.

A new group was convened in 1988 following resolution 42/37 C of 30 November 1987. The report of the group is contained in UN document A/44/561, annex (1989). (See also Part II, Chapter I).

A great number of *definitions of verification* exist. For a chronological overview of definitions see: CHEON, Seong W. and FRASER, Niall M., "Arms Control Verification: An Introduction and Literature Survey", *Arms Control*, Vol. 9, No. 1, May 1989, pp. 38-39.

More generally, see also:

Verification in all its Aspects - A Comprehensive Study on Arms Control and Disarmament Verification pursuant to UNGA Resolution 40/152 (O), by the Arms Control and Disarmament Division, Department of External Affairs, Ottawa, Canada, April 1986.

KARKOSZKA, Andrzej, *Strategic Disarmament Verification and National Security*, London, Taylor and Francis, 1977, pp. 13-14 (a SIPRI publication).

SUR, Serge, *A Legal Approach to Verification in Disarmament or Arms Limitation*, New York, United Nations, 1988, 70 p. (a UNIDIR publication). UNIDIR Research Paper No. 1. Also contains, in on annex, texts of the verification provisions of the instruments treated here. Also available in French.

SUR, Serge, "Can a Minimum Verification Standard be defined in the Field of Disarmament or Arms Limitation", in BRAUCH, Hans Günter (ed.), *Verification and Arms Control - Implications for European Security. The Results of the Sixth AFES-PRESS Conference, Part II Selected Papers*, Mosbach, AFES-PRESS, 1990, pp. 9-25. (AFES-PRESS Report No. 36). Also published in French in *Arès 1989* (Grenoble), pp.13-32.

The notion "*under effective international control*" is used in practically all UN Documents. On the meaning of the word *control* in particular (also as opposed to the term *arms control*) see, for instance:

MYRDAL, Alva, *The Game of Disarmament, How the United States and Russia Run the Arms Race*, New York, Pantheon Books, 1978; or MYRDAL, Alva, "The International Control of Disarmament", *Scientific American*, Vol. 231, No. 4, October 1974, pp. 21-33.

On the linguistic complications see:

KARKOSZKA, (1977), *Op. Cit.*, p.11.

On its underlying assumptions see:

FREI, Daniel, *Assumptions and Perceptions in Disarmament*, New York, United Nations, 1984, p. 110-114 for the USSR and pp. 176-180 for the US.

On the distinction between *verification and monitoring* see, for instance:

MEYER, Stephen, "Verification and Risk in Arms Control", *International Security*, Vol. 8, No. 4, spring 1984.

On the use of verification/monitoring methods for purposes other than disarmament, see, for instance:

MANDELL, Brian, *The Sinai Experience: Lessons in Multimethod Arms Control Verification and Risk Management*, Ottawa, Department of External Affairs, 1987, Arms Control Verification Studies Series No. 3.

On verification and CBMs see, for instance:

Interrelationship of Bilateral and Multilateral Disarmament Negotiations, Proceedings of the Baku Conference, 2-4 June 1987, New York, United Nations, 1988 (a UNIDIR publication). See in particular the Fifth Session *Confidence-Building Measures and Verification: Bilateral and Multilateral Perspectives*, with reports from Klaus Jürgen CITRON, Vladimir EROFEEV and Paul MEYER, pp. 207-249.

GHEBALI, Victor-Yves, *Confidence-Building Measures within the CSCE Process: Paragraph by Paragraph Analysis of the Helsinki and Stockholm Regimes*, New York, United Nations, March 1989, 112 p. UNIDIR Research Paper No. 3 (a UNIDIR publication).

MACINTOSH, James, *Confidence- (and Security-) Building Measures in the Arms Control Process: A Canadian Perspective*, Ottawa, Department of External Affairs, August 1985, 136 p., Arms Control and Disarmament Studies No. 1 (includes also a select bibliography).

SCHÄRRLI, Joseph, "Verification of Confidence- and Security-Building Measures", in UNIDIR, *Problems and Perspectives of Conventional Disarmament in Europe*, New York/London, Taylor and Francis, 1989, pp. 80-88 (a UNIDIR publication).

On verification and compliance see, for instance:

HANDLER CHAYES, Antonia, "From Law Enforcement to Dispute Settlement, A New Approach to Arms Control Verification and Compliance", *International Security*, Vol. 14, No. 4, spring 1990, pp. 141-146.

KREPON, Michael and UMBERGER, Mary (eds.), *Verification and Compliance, A problem Solving Approach*, Cambridge, Mass., Ballinger Publishing Company, 1988, 308 p. (Concerned in particular with US/Soviet compliance).

On verification and enforcement see, for instance:

ADELMAN, Kenneth L., "Why Verification Is More Difficult and (Less Important)", *International Security*, Vol. 14, No. 4, spring 1990, pp. 141-146.

RANDER, Robin and ZAKHEIM, Dov S., "More Than Ever, Arms Control Demands Compliance", *Orbis*, Vol. 34, No. 2, spring 1990, pp. 211-226.

SUR, Serge, *A Legal Approach to Verification in Disarmament or Arms Limitation*, New York, United Nations, 1988, 70 p. (a UNIDIR publication). UNIDIR Research Paper No. 1 (Also contains, in annex texts, of the verification provisions of the instruments treated here).

On verification and on-site inspections see, for instance:

DUNN, Lewis and GORDON, Amy, E., *Arms Control Verification and the New Role of On-site Inspection, Challenges, Issues and Realities*, Toronto, Lexington Books, 1989, 251 p.

REMACLE, E., "L'inspection sur place, symbole de la transparence dans les accords de désarmement", *Mémoire Défense-Désarmement 1988*, GRIP, Bruxelles, 1988, pp. 22-37.

STOVALL, Don, "A Participant's View of On-Site Inspections", *Parameters: US Army War College Quarterly*, June 1989, pp. 2-17.

On national positions on verification see, for instance:

MORRIS, Ellis, *The Verification Issue in United Nations Disarmament Negotiations*, New York, United Nations, 1987, 230 p. (a UNIDIR publication).

UNIDIR also started in 1989 several other projects on national positions with respect to verification.

Thus far it has published a *Soviet view*, see:

KOKEYEV, Michael and ANDROSOV, Andrei, *Verification - The Soviet Stance, Its Past, Present and Future*, New York, United Nations, 1990, 123 p. (a UNIDIR publication).

On earlier Soviet views on verification see, for instance:

TMERBAYEV, Roland, *Verification of Arms Limitation*, Moscow, Progress Publishers, 1983 (published

for the Scientific Research Council on Peace and Disarmament), or ZHELEZNOV, R., "Monitoring Arms Limitation Measures", *International Affairs*, No. 7, 1982, pp. 75-84. For an American view of the Soviet position see, for instance: KRASS, Allan S., "The Soviet View of Verification", in POTTER, William C., *Verification and Arms Control*, Lexington, Mass./Toronto, Lexington Books, 1985, pp. 37-62, or POTTER, William C., BELYAEV, Leonid V. and LAY, Mark, "The Evolution of Soviet Attitudes Toward On-Site Inspection", in DUNN, Lewis and GORDON, Amy, E. (eds.), *Arms Control Verification and the New Role of On-Site Inspection: Challenges, Issues and Realities*, Toronto, Lexington Books, 1989, pp. 185-206.

A publication on the *French position* with respect to verification is under preparation and will be published by UNIDIR in 1991.

On *US positions* with respect to verification see, for instance:

PORTEUS, Holly, *US Perspectives on Arms Control Verification*, Aberystwyth, Department of International Politics, University College of Wales, May 1988, 29 p. or

HAMBURG, Eric, *Arms Control Verification and the US Constitution*, A Working Paper for the Center for International Security and Arms Control, Stanford CA, Stanford University, August 1989, 16 p.

See also the studies mentioned in the various Chapters in Part II, in particular those dealing with bilateral agreements.

The problem of *unilateral measures and verification* was touched upon in the Conference on Problems and Perspectives of Conventional Disarmament in Europe organized by UNIDIR in January 1989. See:

UNIDIR, *Problems and Perspectives of Conventional Disarmament in Europe*, New York/London, Taylor and Francis, 1989, p. 54.

On unilateral measures see, for instance also:

CHALMERS, Malcolm, *Reciprocal Unilateralism as a Complement to CFE; Two Studies*, Mosbach, AFES-PRESS, 1990, AFES-PRESS Report No. 37.

As far as *technology and verification* are concerned, reference may be made to:

KRASS, Allan S., *Verification: How Much Is Enough?*, London, Taylor and Francis, 1985, 271 p. (a SIPRI publication). See in particular Chapter 2 on *The Technology of Verification*.

See also:

BANNER, Allan, HALL, Keith W. and YOUNG, Andrew, *Aerial Reconnaissance for Verification of Arms Limitation Agreements - An Introduction*, New York, United Nations, 1990. (a UNIDIR publication).

JASANI, Bhupendra and BARNABY, Frank, *Verification Technologies - The Case for Surveillance by Consent*, London, Berg Publishers, 1984.

PUGWASH Symposium (11-12 May 1988), *On Scientific and Technological Aspects of Development of New Weapons, Verification Issues and Global Security*, New York, United Nations, May 1988.

TSEIPS, Kosta, HAFEMEISTER, David W., JANEWAY, Penn (eds.), *Arms Control Verification - The Technologies that Make it Possible*, Washington, Pergamon, Brassey's, 1986.

Part I

General Considerations on Verification

General Considerations on Verification

Serge Sur

The central role of verification, both in the negotiating process and in the implementation of international agreements in the field of disarmament and arms limitation, is generally acknowledged. However, this being said, problems arise. Indeed, when considering all international agreements in force, one is struck by their great diversity. At first sight, it is not the unity of the modalities and conditions of the verification process which strike one, but rather their large variety.

On closer examination, as intended here, the process is even more complicated. The definition of verification and the analysis of its functions are more complex than might be supposed. Furthermore, the definitions applicable to the international instruments that fall within the scope of this study are specific and sometimes differ widely from one another. The instruments themselves are very varied and reflect a variety of approaches to disarmament. The result is a need for an analytical approach to the ways, means and practices of the verification of disarmament and arms limitation agreements.

I - Definition and Functions of Verification

DEFINITION

Wording

Many definitions of the word verification have been proposed, but none is really official. The term itself is relatively little used in the agreements examined here. The term "control" also appears, including in the most authoritative United Nations documents. There seems no need to attach too much significance to these variations in terminology; the word "verification" may be considered to have been generally adopted for multilateral, regional and bilateral use.

In very general terms, it may be stated at this point that verification is *a process covering the entire set of measures aimed at enabling the Parties to an agreement to establish that the conduct of the other Parties is not incompatible with the obligations they have assumed under that agreement.*

This definition calls for a few comments with the aims of relating verification to similar concepts, defining its characteristics and describing the principal ways in which it can be organized.

Verification, monitoring, confidence-building, safeguards and coercive measures

Monitoring, which people too often tend to confuse with verification, is both a broader and a narrower concept. It is broader in so far as it is linked neither to agreements nor

to specific undertakings but can be effected at any time with regard to any activity, subject to compliance with international law. Consequently, it is not tied to disarmament or arms limitation in particular, but extends, for example, to crisis management, early warning, identification of possible targets, etc. It consists, for States, in keeping themselves suitably informed of the activities, whether domestic or international, of other States, using the means legally at their disposal for that purpose. It entails the collection and analysis of factual data. It also stops there. It is in that sense narrower than verification, which implies that, in addition to this dimension of factfinding, the facts should be subjected to legal-political assessment with respect to the undertakings entered into. The objective of verification is to evaluate whether those undertakings are or are not fulfilled. Verification is therefore as much about standards of conduct - i.e. the undertakings - as about facts, and that difference is fundamental. Certainly monitoring is an essential and many would say the main part of the process of verification, but it is only a stage.

Confidence-building likewise has close links with verification even though it remains a substantially different concept. Close links because the organization of verification procedures can be considered a confidence-building measure in itself. The Stockholm Document (1986, see Part II, Chapter 14) is illustrative in this respect. By the same token, such measures may also enable false accusations to be avoided or refuted, which is close to some aspects of verification. But they are also conceptually different: whereas confidence-building measures are sufficient in themselves and constitute the principal subject-matter of an undertaking, verification has meaning only with respect to another undertaking to which it has a secondary or subsidiary relation. It can be defined only by reference to that undertaking and has no subject-matter of its own. Furthermore, the subject-matter of a primary undertaking, viz confidence-building measures, can be subject to verification, which clearly shows their difference in kind.

With safeguards, the difference is also subtle but substantial. Safeguards - for example those provided for in the nuclear field by the International Atomic Energy Agency in Vienna (IAEA) - intend to give a positive demonstration of compliance with the treaty. Verification, on the contrary, cannot but provide a negative demonstration - i.e. violation of a given treaty cannot be established. For example, the Non-Proliferation Treaty does not contain any specific verification provisions. Only safeguards - those of the Vienna Agency - are foreseen. However those safeguards, resulting from agreements between each party to the NPT and the Vienna Agency, are submitted to a verification mechanism carried out by the Vienna Agency through inspections (see Part II, Chapter 6). Safeguards *per se* are closer to confidence-building measures than to verification.

It remains to distinguish verification from coercive measures, by which is meant all the measures, whether individual countermeasures or collective means, that can be taken in response to a breach of an undertaking. Logically, verification should condition coercive measures, since its aim is to establish whether a party has breached an undertaking. There would, indeed, be grounds for querying the usefulness of

organized verification if the latter did not result in measures aimed at restoring the Parties' rights in cases of breach, at maintaining their security and at safeguarding the treaty as a whole. But, despite all their links, these two concepts remain distinct, and the difference between them is amply confirmed in practice. Many treaties that contain elaborate rules for verification are silent on responses in the event of a breach or deal with them only indirectly (see Part III). As will be seen below, the relationship between verification and coercive measures has more to do with the functions than with the actual nature of verification.

Verification as a Process

As a process, verification comprises several stages and is therefore composite; each of its stages may be of some complexity. Finally, the process is characterized as regards its outcome by relativity.

As a composite process, verification begins with the establishment of facts relevant to the application of the undertakings. This technical phase can itself be broken down into stages of data collection and of analysis of that data. These two aspects of factfinding require neither the same resources nor the same skills. In practice, however, it is quite clear that the countries that have the material and technical resources necessary to collect the pertinent data, by remote sensing or otherwise, also have analysts capable of interpreting that data. On the other hand, it is easier to train data analysts than to procure the technologically complex and expensive resources required for data acquisition.

Verification further requires a legal assessment of the correctness of the Parties' conduct as measured against their undertakings and the rights of the other Parties. This assessment can be made by all the Parties, acting individually or collectively. If it is to have effective legal authority, however, it can only be made by the Parties themselves - except in cases where they place the matter in the hands of an arbitral or judicial organ. Action by international organizations can only have such authority as results from the consent of the Parties or from the powers that the organizations derive from their own charters. There are, for example, several treaties which provide for intervention by the Security Council, but which do so without attributing to the Council any powers other than those that it already enjoys under the Charter. (See for example the Sea-Bed Treaty (1971), the Biological Weapons Convention (1972), the ENMOD Convention (1977), Part II below, Chapters 7, 8, 11; see also Part III.)

As regards the Parties, the position each of them takes is its own and is not binding on the other Parties without their consent. It is thus difficult to avoid disputes concerning the facts, their legal characterization and their consistency with the undertakings in question. In reaching its assessment, however, a party is not exclusively - and perhaps not even principally - guided by legal considerations. The instruments in question bear closely upon State's security. They are therefore at the heart of political decision-making. As a result, the position that is taken, elaborated in accordance with law or at least on the basis of a legal argument, will depend in

essence on security requirements as perceived by the State in question. This may bring that State to overlook certain minor infractions, either because they were unintentional or do not jeopardize its security, or because in the light of them it considers itself entitled to adopt a similar attitude.

As a complex process, verification entails a combination of procedures and methods. Firstly, this is because of the distinction between the phases mentioned above—data collection, analysis, legal-political assessment and political decision-making. In other words, different kinds of authorities will be called upon to state their opinions in either a national or an intergovernmental context.

But verification is also complex in each of its components: data collection, for example, more often than not entails a combination of procedures and methods, of which the INF Treaty offers a good example. The constant overlapping of legal and political elements in decisions concerning the assessment of the conduct of other Parties is a further example. Finally, the possibility that there may be international procedures involving a number of States adds yet another dimension to the complexity.

Verification is relative in as much as it cannot provide any automatic or absolute guarantee of certainty concerning full compliance with the undertakings entered into. At this juncture we must dispel an all-too-common belief: verification cannot prove compliance with an obligation. To be precise, it could only do so in the extreme case of an all-embracing positive obligation: for example, an obligation entirely to destroy a certain type of armament or to eliminate completely a category of weapons. But for the commonest types of undertaking which comprise limited positive obligations (to destroy certain weapons, but not all weapons), or negative obligations (not to test, not to deploy or not to manufacture certain weapons), proving full compliance is impossible.

All that verification does provide is negative evidence: it cannot be proved that the undertaking has been breached, and so it must be presumed that it has been complied with - but that presumption is a legal fiction. Hence the importance of establishing procedures that will dispel as much uncertainty as possible. However, at least in many cases, procedures cannot eliminate all uncertainty; if they could, they would be too costly and too intrusive and would constitute an intolerable impediment to the normal functioning of the State. The concern for security would in fact act against security, and in that respect there are objective limits to verification. The choice between conflicting security requirements is peculiar to each negotiation and thus specific to each agreement or instrument.

Hence, verification can only detect breaches, and not all breaches at that. The choice, however, is generally considered satisfactory when verification makes a breach more costly in terms of the risk of discovery or of its human, financial or technological price.

Organization

Verification may take a wide variety of forms. It may be unorganized or organized, unilateral or co-operative; as a general rule it is specific to the relevant instrument, but it may also be national or international.

- *Unorganized and organized verification.* This distinction contrasts the general situation, which results from the absence of special provisions concerning verification in a treaty on the one hand, and the existence of procedures organized by the treaty on the other. In the first case, verification is still possible, but can be based solely on the general competence of the State as it derives from the State's sovereignty and from the general rules of international law. In practice, therefore, it is closely tied to the means at the State's disposal. For example, the 1963 partial test-ban Treaty contained no special provision concerning verification. But the Parties, or at least some of them - those with the most immediate interest in the cessation of the prohibited tests - considered at that time that the remote sensing capabilities at their disposal were adequate (see Part II, Chapter 3).

Thus, unorganized verification is possible. It is, however, particularly inequitable. As a general principle it can be stated that the less organized verification is, the more inequitable it is. One of the positive aspects of unorganized verification, however, lies in the possibility of checking compliance with unilateral commitments which, by definition, contain in principle nothing about procedures organized for the benefit of third parties.

The arrangements for organized verification depend on the provisions of the instrument concerned.

- *Unilateral and co-operative verification.* What do these involve? Unilateral verification is undertaken by each State individually; the State employs its own resources and draws its own conclusions, which bind only itself. It should however remain distinct from unorganized verification. It is protected by special provisions in the relevant treaties. It can be found in the bilateral USA-USSR agreements, which provide for protection of National Technical Means. Co-operative verification, on the other hand, entails several Parties working together, combining their resources and striving to reach common conclusions. Hence, it is by nature international - or, more precisely, intergovernmental. However, regardless of the way in which it is actually organized, there may be varying degrees of co-operative verification.

- Firstly, depending on the elements of the process: there may be co-operative verification as regards the collection, or even the analysis of data, and purely unilateral verification as regards the legal-political assessment of the conduct that the data reveals. For example, in the INF Treaty, the co-operative aspect focuses on data collection, whereas the assessment of the data in terms of

observance or non-observance of the Treaty remains unilateral. For the collection of the data itself, the procedures laid down combine unilateral methods (through the protection of National Technical Means) and active co-operation (through the procedures for on-site inspection, but also the obligation to open up missile silos for remote sensing (see Part II, Chapter 15). Other treaties, however, keep factfinding unilateral, but open the way to co-operative solutions as regards the settlement of disputes (for example, the Antarctic Treaty, see Part II, Chapter 2);

- Secondly, depending on the States concerned: the co-operation may encompass all the Parties, as is naturally the case under bilateral agreements. But it may concern only some of the Parties who will co-operate in factfinding by assisting one another. In the latter instance, the situation is, in a sense, part way between unilateral and co-operative verification. The positions taken will be peculiar to certain States and will not, at least *a priori*, bind all the Parties. An example is the 1971 Sea-Bed Treaty, which provides for co-operation on a regional basis (article III, para. 2) that can be extended to all the States Parties. Situations of this kind would be more institutionally based if there were verification mechanisms or instruments specific to certain military alliances or to a group of States bound by closer common institutions than the Treaty - in the European context, for example. Such a development may now be envisaged for the future.

- *Specific and general verification.* The principle of specificity is fully upheld in connection with the instruments that are the subject of the present study. It implies that procedures and means are specific to, and defined by, each instrument and limited to their own field.

General verification would imply a global mechanism, separate from each specific treaty, but potentially applying to all of them. In this broad approach, general verification is almost impossible. Indeed, it is always a matter solely for the Parties to a treaty to interpret it and to establish whether it has been breached. Hence it would be necessary for them to agree, in the context of all the treaties currently in force, to give such a responsibility to a common institution, to enable us to speak of general verification. The political and other obstacles to such a process may be imagined.

Nevertheless, if we consider only the first step of the verification process - monitoring - we can more easily envisage the establishment of common mechanisms whereby relevant data could be collected and possibly subjected to technical evaluation. Such ideas were behind the various proposals for the establishment of international organizations for verification or an international satellite monitoring agency. This general verification in the narrow sense remains in the future for the time being.

- *National and international verification.* This distinction is partly connected with the previous ones. National verification is by far the most frequently mentioned

opinion, even in the case of organized procedures. In most cases the Parties are allowed to conduct monitoring and verification using their own means, without using international mechanisms.

International verification, which might more accurately be termed institutional verification, implies the intervention of international organizations or organs, using their own facilities.

Three different forms can be broadly identified, with the third one still problematic.

1. The first form involves action by existing international organizations. If such action is provided for in an instrument (like, for example, the 1971 Sea-Bed Treaty or the 1972 convention on the prohibition of biological weapons in relation to the Security Council), it represents a particular application of the principle of specificity. If it stems from the intrinsic competence of an organization outside the treaty, it is more markedly international. In such instances, however, it cannot extend to the whole of the process. It concerns only the phase of factfinding and is not able to infringe upon the exclusive right of the Parties to the Treaty to interpret and assess their rights and obligations (see, for example, the resolutions of the General Assembly concerning investigations by the Secretary-General in the event of the alleged use of chemical or biological weapons; see Part II, Chapter 1).

2. The next case that might be mentioned is the creation, by treaty, of international organizations specially devoted to verifying those treaties. One example of this is the establishment of OPANAL within the framework of the Treaty of Tlatelolco (see Part II, Chapter 5). On the other hand, the consultative commissions created under the US-Soviet bilateral treaties cannot be considered true international organizations, any more than can the consultative meetings of Parties - meetings which have some competence as regards verification - provided for in the 1959 Antarctic Treaty. In any case, the creation of special institutions is an application of the principle of specificity, as the convention on the prohibition of chemical weapons currently under negotiation perhaps will show.

3. Finally, mention can be made of the establishment of international organizations specially constituted for participation in the process of verification. A well-known example is that of the ISMA project proposed by France in 1978. But this has still not come to fruition. In any event, it falls outside the scope of this study, which is concerned with procedures already in force and their application in practice. But it is conceivable that, without any amendment of the instruments that are the subject of verification, new institutions having the requisite competence could be created and add a truly international dimension to the existing purely national or intergovernmental machinery. Specificity would then be challenged for, thanks in particular to remote sensing, those

institutions could participate in the process of verification for a range of separate treaties using identical procedures.

Verification cannot be understood without an examination of its usefulness and its *raison d'être*, i.e. the functions it fulfils. Those functions, which again, are more varied than might at first be thought, illustrate the complexity of the process.

FUNCTIONS

The functions of verification are manifold. They depend, first, on the development of the relevant procedures, and in particular on their national or international, unilateral or co-operative character. Secondly, they depend on the expectations of the different Parties to the relevant treaties. For example, it is often stated that, in the United States, the requirements in the field of verification are related to the demands of Congress, which makes its consent to ratification subject to strict conditions. However, the Administration's demands have also grown during the last decade. Nowadays, the Soviet Union also places much greater emphasis than previously on the need for special procedures. A significant number of non-aligned countries are keen to promote international mechanisms of verification, if possible within the framework of the UN.

These different preferences are clearly linked to different perceptions about the usefulness and role of verification. It is interesting in this respect to ascertain and to analyse national positions, their *raison d'être* and their development. However, it is not the purpose of this book to reflect, even in a short and consolidated form, the different subjective positions of States. The aim here is to take an overall view of the treaties and instruments in question and to compare the procedures set out in them to try to highlight the objective functions that the verification process may perform.

These objective functions are performed on the basis of the provisions of the relevant treaties, and may be diversified and developed to a greater or lesser extent depending on their nature and degree of comprehensiveness. But in some respect all of them are related to the security of the Parties. Indeed, the concept of security is much broader than verification, broader even than disarmament. But the essential function of verification is to be a tool for the security of the Parties. This function may emerge only indirectly, for example by discouraging non-compliance, by allowing the evaluation of commitments in the fields of disarmament or arms limitation, or by encouraging the disarmament dynamic. But whether it appears directly or indirectly, security remains at the heart of verification.

Verification and Security

In this respect, verification fulfils the same function as disarmament or arms limitation agreements, the purpose of which is to strengthen international security - and above all that of the Parties - by the stability and predictability of their behaviour. Whatever its moral justification, the enterprise of disarmament is founded on the free will of States

and consequently cannot be envisaged independently of their security. The approaches to disarmament are themselves multiple, ranging from the restrictive and largely bilateral concept of arms control to the UN notion of general and complete disarmament under effective international control, a global and universal goal. All, however, are based on the right of States to security and represent the implementation, and not the overstepping, of that right.

The concepts of security are, however, varied and the same principle covers widely differing, not to say contradictory, applications: arms control, for example, is based on a theory of nuclear deterrence, whereas general and complete disarmament aims as a priority at the elimination of nuclear weapons. Such differences, and even such contradictions, are also a feature of the links between verification and security; depending on whether the verification is unilateral or co-operative, its significance for the security system changes profoundly.

Unilateral verification - and by this is meant principally verification entailing, whatever the modalities of factfinding, unilateral assessment and decision-making by a State - corresponds to a guarantee of the individual security of the States concerned. Each of them assesses in the light of its own conceptions and interests whether or not there has been a prejudicial breach and, on that basis, draws such conclusions from the situation as it wishes. This is the traditional concept of security and, moreover, is largely consistent with practice, despite the system of collective security established by the Charter. That system applies only in the event of threats to the peace, breaches of the peace or acts of aggression. Even in those circumstances it is subject to the agreement or, at the very least, the non-opposition of the five permanent Members of the Council, who are not prevented from basing their attitudes on their own interests. In these circumstances, it is not surprising that verification should be a reflection of this prevailing concept of security, that it should in large measure be a by-product of it. Analysis of the instruments in force will show that virtually all of them - with the possible exception of the Treaty of Tlatelolco - follow this pattern.

Co-operative verification - in which decisions regarding breaches can be taken only with the common consent of the Parties, or by an organ established by them, and on the basis of organized common procedures - is still at present pure hypothesis, except for certain isolated elements of the process. If it could be put into effect, it would bring about not merely a technical change, but above all a qualitative change in verification and in the enterprise of disarmament as a whole. That enterprise would no longer be so markedly an uncertain and revocable element of the individual security of States, security which, as the unilateral and quasi-discretionary right of withdrawal contained in most treaties shows only too well, is individually defined and implemented. It would become an autonomous enterprise and verification would be a guarantee of the upholding of treaties, and thus of disarmament as a whole. Treaties would no longer be contracts without arbiters, but laws subject to collective procedures. That goal is still a long way off, even if the chemical weapons negotiations may blaze some trails towards it.

Of course, what is being discussed here are two extremes between which intermediate solutions are possible. Such is the case, for example, when there are co-operative procedures for factfinding.

Verification and Failure to Comply With Agreements

The most evident function or, rather, series of functions of verification is to promote the observance of a treaty by the Parties through deterrence, establishment of breaches, protection of the concerned Parties and, possibly, reaction against misbehaviour.

Deterrence because, as already stated, the outward value of the procedures is that they spread certainty among the Parties that any significant breach will be detected and that it will be of no benefit to its perpetrator. Clearly, the procedures must be effective enough for such breaches to be detectable, at the very least with a high degree of probability.

Establishment of breaches, in so far as the procedures must assure the Parties that they will be able to detect breaches, and detect them in time to take the requisite security measures. What is at stake is not some academic confirmation for use in a subsequent dispute, but a possible serious and immediate infringement of the Parties' security. Here time is crucial, and verification is akin to an alarm mechanism.

Protection because, on the basis of the findings, the Parties must be able to take countermeasures that will maintain or restore their security. In the absence of collective machinery, those measures can only be taken on a unilateral basis. Hence the value of procedures to elucidate dubious situations and dispel misconceptions and, therefore, of co-operative procedures ensuring immediate contact, either directly or through intermediaries, between the Parties concerned.

Reaction when, on the basis of the confirmation of a breach and in addition to measures to protect the Parties' individual security, a coercive mechanism can be applied against the perpetrator of the breach.

It is true that the process of verification *stricto sensu* does not encompass such sanctions. But it does have a twofold relationship with such machinery: on the one hand, it conditions its use, by offering an objective basis for its application, and on the other hand and conversely, the existence of such a mechanism makes verification more meaningful.

It strengthens the guarantee of application of the treaty and thus makes verification part of a set of measures aimed at keeping the treaty in force. If, on the other hand, there is no mechanism or an insufficient one - which, in the present state of affairs, is the usual situation - the likely outcome will be the unilateral withdrawal of the Parties that consider themselves injured by the breaches and are no longer willing to tolerate obligations without some *quid pro quo*. In fact, withdrawal is widely provided for in the Treaties examined here. Withdrawal in such circumstances is as much protective as repressive, but it may culminate, step by step, in the disappearance of the treaty as a whole, so that the individual security of the Parties prevails over the maintenance in force of the agreement. It should be noted, however,

that despite the absence of organized controls, no withdrawal of this type has yet occurred; this suggests that the instruments in question have, on the whole, been observed.

Verification and the Evaluation of Agreements

The possibility of verification and the efficiency of the procedures constitute a criterion for measuring the value of undertakings. The evaluation can be made by the Parties at two successive stages.

At the stage of negotiation, it is clear that only verifiable undertakings will be acceptable. Agreement on effective machinery is an indication of a real desire to conclude and not to indulge in mere sham proposals. Verification was long seen as an obstacle to disarmament in that certain States considered it as legalized spying and, for instance, refused the idea of on-site inspections on their national territory as being too intrusive or able to be used in a provocative way. The USSR, a long-time defender of this position, later changed its attitude both because of general political liberalization and because it hoped to gain at least an equal return in terms of information on its partners' conduct and capabilities. It must however be stressed that, spectacular as they are, the changes in the Soviet position were less progressive than appears at first glance. On-site inspections were agreed upon a long time ago on non-State territories - Antarctica or the Moon. Since 1974 and 1976, the principle of on-site inspections on Soviet national territory was accepted in the framework of the bilateral partial bans on underground nuclear tests (see Part II, Chapter 3).

While verification no longer appears to be a fundamental or political obstacle, numerous technical difficulties remain with regard to the definition of satisfactory procedures. The task of developing this machinery has not necessarily been made easier by entrusting it to experts. Could it be said that a verification technocracy or bureaucracy tends, in the name of expertise and endless dissection of the problems, to delay the decisions, particularly as it does not hold the political key to them? It is sometimes difficult to say whether the delays result from objective difficulties or from a desire, albeit passive, to play a waiting game.

There has, however, recently been an innovation in this regard with the introduction of prior testing, in the framework of the negotiation, of the applicable procedures in order to measure their efficiency and thence the feasibility of the agreement. This makes the evaluation twofold: evaluation of the procedures themselves and, underlying this, evaluation of the agreement that they condition.

At the stage of application, there may be consultative commissions (as are found in the bilateral treaties or the Antarctic Treaty) or periodic review conferences aimed, at least in part, at evaluating the operation of the procedures and perhaps suggesting improvements in the event of shortcomings. This has been the case, for example, with the 1972 Convention on the prohibition of biological weapons. Improvement, however, normally presupposes a revision of the treaty and hence the always difficult exercise of calling its initial balance into question.

Evaluation may thus result in the refinement of a treaty, with the strengthening of the procedures for verification. This possibility, which is sometimes provided for in theory by the treaties themselves, has never materialized, at least so far. The formula set out in the June 1990 protocols to the American-Soviet partial test-ban treaties concerns treaties which were not in force, but which may be enabled to enter into force as a result of this very formula (see Part II, Chapter 3).

Indirect mechanisms can sometimes lead to a similar result. For example, the 1925 Geneva Protocol prohibiting the use in war of chemical and biological weapons contains no provision for organized verification, and it would be particularly difficult to modify. This will come more from the conclusion of the future convention on the complete prohibition of chemical weapons than from direct revision. Already, however, the widely recognized inadequacy in this regard has prompted the General Assembly to entrust the Secretary-General with an investigation on the basis of organized procedures (see Part II, Chapter 1).

Verification and the Course of Disarmament

The role of verification on the course of disarmament can be seen from two different points of view.

On the one hand, technological progress can have the effect of widening the range of verifiable provisions. For example, thanks to the development of remote sensing by satellite or seismograph, it was possible for some 15 years to bypass the obstacle of on-site verification and make do with the protection provided by national technical means, particularly in the American-Soviet bilateral agreements. It has already been noted that, with the more recent development of mechanisms considered satisfactory by both Parties, it should be possible for agreements limiting nuclear testing signed many years ago (1974 and 1976) to come into force. New technologies whose consequences cannot at present be fully assessed remain to be explored. It would, of course, be naive - especially as technological progress augments the disparities between States - to think that a technological solution could be found to all the problems of verification, a solution that would gradually replace political decision-making. But practice provides clear evidence of the constant link between technological capacity and progress in disarmament or arms limitation agreements.

On the other hand, the disparity between States in concrete verification capabilities is a permanent hindrance to the conclusion of such agreements, particularly multilateral ones. The transfer of technology by co-operation between the Parties is an intellectually appealing, but probably an unrealistic solution. Could the internationalization of verification through the establishment of a multilateral monitoring system, as suggested by some countries, meet the needs of the numerous States that would like to participate in the enterprise of disarmament, but do not have the technical, financial or human resources necessary for verification?

That question goes beyond the scope of this study, which is concerned with the agreements and instruments that are in force. It is more relevant to the study on

verification being conducted by a group of governmental experts under the auspices of the UN. The internationalization of verification would not necessarily imply amendment of the treaties now in force, but could give rise to new forms of co-operation between the Parties by developing means of information and communication. The outcome would be the achievement, through verification and particularly through the data collection and dissemination segment of verification, of increased multilateralization of the enterprise of disarmament as a whole.

II - Disarmament and Arms Limitation Agreements and their Verification Procedures

Anyone taking an overall view of the treaties and instruments with which this book is concerned will be struck by their great diversity. It is not surprising therefore that the verification procedures they lay down - when, indeed, they do so - should also be very varied.

GENERAL FEATURES OF THE TREATIES AND INSTRUMENTS IN QUESTION

Absence of Common Characteristics

Can any common characteristics be found in these different texts? It would be intellectually attractive, and perhaps politically significant, to define the dominant elements, the constant driving principles of the enterprise of disarmament. Could not there be found in the corpus of disarmament and arms limitation law that the score of texts in question represent some points of resemblance, some homogeneous data conferring a unity upon the enterprise of disarmament? The temptation is all the greater as, since 1978 and the first special session of the General Assembly devoted to disarmament, the United Nations has defined a global approach and drawn up general directives in this respect.

The reality is very different. It is true that the present study considers only collective instruments, thereby excluding, on the one hand, custom and its possible unificatory contribution to disarmament law and on the other hand, unilateral instruments. With few exceptions (see above, on the prohibition of the use of chemical and biological weapons), those two categories of legal obligations are not subject to procedures for organized verification. But even keeping to the most visible and unchallengeable part of this body of law, comprising treaties and certain collective documents which are not set out in treaty form - such as the 1986 Document of the Stockholm Conference - it is the differences between the instruments that predominate.

Existence of Numerous Differences

These differences are of many kinds, the most significant of which are enumerated below.

1. Differences in time. Even by limiting the attempt to find some unity or co-ordination among the instruments by date, most of the agreements examined here were reached before 1978 and neither their status nor their political regime has since been altered by the UN. With respect to these agreements, 1978 is merely a date like any other and it is perhaps more appropriate to distinguish between three phases:

Firstly, the phase which corresponds to the effort between the two World Wars. This means the 1925 Geneva Protocol, a treaty of undeniable importance and topicality, even if it must be considered at least as much in the context of humanitarian law or the law of armed conflict as in that of disarmament.

Secondly, the phase which corresponds to the conclusion of the major treaties on arms control or arms limitation, treaties marked by an active combination of bilateralism and multilateralism. This period runs from 1959, when it was heralded by the Antarctic Treaty, to 1979, the year of the (at least partial) failure of the bilateral SALT II agreements. It encompasses major instruments, in particular the 1963 Partial Test-Ban Treaty, the 1968 Non-Proliferation Treaty and the 1972 ABM Treaty (see Part II, Chapters 3, 6 and 9).

Finally, for the past decade, the results have been less impressive, even if the disarmament process has in many ways been boosted. But the situation is basically one of waiting, of delayed agreements, of provisional formulae.

For example, the investigations in the case of alleged use of chemical and biological weapons conducted by the Secretary-General of the UN are carried out on the non-binding legal basis of General Assembly resolutions. Furthermore, their fulfilment is predicated on the active participation of the concerned countries.

In the European context, ongoing negotiations are promising, but the recent political changes have modified their background and complicated their achievement. The Stockholm Document of 1986 is indeed a politically binding instrument, and one may be tempted to consider it as a genuine international treaty. But formally, it is not. Nevertheless, it contains two innovations as regards verification: on the one hand by organizing on-site inspections on the national territory of the signatories; on the other hand by providing for aerial means of monitoring and flights over the national territories of the signatories.

In the bilateral context, a boost was given by the INF Treaty of 1987, confirming and enlarging the breakthrough concerning on-site inspections. But the START talks have been held up by the complexity of the technical difficulties, especially as regards verification.

As for the chemical weapons talks, which account for the bulk of the work of the Conference on Disarmament, the ambitious nature of the undertaking and the constraints it entails, also in the field of verification, are leading to delays in the expected finalization of a treaty completely eliminating a category of particularly fearsome weapons.

2. Diversity of the negotiating bodies. Although some treaties, and not the least among them, were drawn up following a multilateral procedure in which the UN played an effective role, and although the Conference on Disarmament is considered

the single multilateral disarmament negotiating forum, the instruments in question were negotiated in widely differing contexts. To the multilateral there must be added regional and bilateral contexts that remain completely separate.

In the case of the US-USSR negotiations, the partners have always upheld the autonomous nature of their relations and have never agreed to intervention by other bodies for the purposes of guiding or monitoring them. In fact, information on these negotiations has always been confidential. The converse, however, is not true and, where multilateral negotiations are concerned, the impact of the bilateral agreements has always been considerable, as have the consequences of US-Soviet disagreements.

The more recent development in the regional context, which has yielded positive results (the 1985 Treaty of Rarotonga and the 1986 Stockholm Document), has responded to the same logic of autonomy.

It is true that, on a general political level, progress and difficulties in disarmament form a whole, but the negotiations remain distinct both as regards their institutional framework and as regards the Parties concerned.

3. *Separateness of the agreements.* Each treaty or instrument must be considered separately, and it is impossible to make of them a legally - and even in some respects, politically - co-ordinated ensemble. They do not have the same parties, and each of them is applicable independently of the others. That is true even when they contain cross-references or appear complementary as, for example, the ABM Treaty relative to the 1967 Outer Space Treaty; the 1972 Convention on the Prohibition of Biological Weapons relative to the 1925 Geneva Protocol; the bilateral treaties of 1974 and 1976 and the multilateral Treaty of 1963 on nuclear testing. The obligations under various treaties may overlap and strengthen each other, as in the Antarctic Treaty, the Partial Test-Ban Treaty of 1963, or the Outer Space Treaty of 1967, for nuclear tests. But the overlap is only a limited one. The instruments may, moreover, have different levels of authority: as was already pointed out, the legal nature of the Stockholm Document remains unclear; similarly, while they mention the Geneva Protocol, the resolutions of the General Assembly on investigations in cases of alleged use of chemical weapons are not binding and are not legally connected to that Protocol.

4. *Differences in object.* Some treaties are principally devoted to disarmament or to arms limitation: the 1963 Partial Test-Ban Treaty, the 1968 Non-Proliferation Treaty and the 1985 Treaty of Rarotonga, for example; and indeed, all the bilateral agreements considered here. But others deal with the matter only incidentally, or at best partially; this is the case with the Antarctic Treaty, the Outer Space Treaty or the 1979 Agreement concerning the Moon, which also deal with the status of, or regime for, the areas to which they apply.

5. *Differences in spirit.* It is true that all the instruments considered deal with security - the military security of States - in the widest sense of the term. They are inspired, however, by ideas that are neither homogeneous nor even necessarily complementary.

Some treaties are instruments of, what could be called, humanitarian law and seek to lay down the laws of war or to protect civilian populations; examples are the

1925 Geneva Protocol, the 1981 Convention on Conventional Weapons (see Part II, Chapters 1 and 12) and, in certain respects, the 1977 ENMOD Convention. Others are clearly inspired by the exigencies of arms control, which presupposes the rationalization, and hence the legitimization, of nuclear deterrence: examples are the 1967 Outer Space Treaty, the 1971 Sea-Bed Treaty and the 1972 ABM Treaty. Others, such as the 1967 Treaty of Tlatelolco, the Non-Proliferation Treaty, or the 1986 Stockholm Document, are more clearly in keeping with the spirit of disarmament. Still others are more ambiguous, such as the 1987 INF Treaty, which perhaps marks the opening of a phase of *rapprochement* between disarmament and arms control.

6. *Diversity of methods of disarmament or arms limitation.* Elementary analysis of the provisions of the instruments examined here reveals 14 types of obligations concerning disarmament measures that can be the subject of verification (see table 1 annexed to the present part). These measures are sometimes alone and sometimes in groups, but there are never more than seven of them in any one instrument, this number being attained in the 1971 Convention on the Prohibition of Biological Weapons. Two other agreements, the Treaty of Tlatelolco and the INF Treaty, contain six different categories of obligations, while the 1972 ABM Treaty has five. Most of the instruments contain two or three obligations and, in any event, only exceptionally do these include the prohibition of use and destruction. Simple comparison of the measures laid down, and even the fact of their diversity, show that on the whole these are instruments of arms regulation and limitation rather than of disarmament in the precise sense of the term. For the most part, the measures can be broken down into negative obligations and limited negative obligations.

There is clearly no parallelism between arms limitation methods and verification procedures. The same procedures - for example, protection of national technical means allowing remote sensing - may be laid down for differing obligations, such as prohibitions on the testing, deployment or use of certain weapons or the denuclearization of certain areas. Conversely, the same measure may be the subject of differing, combined verification procedures. Thus, the obligation in the INF Treaty to destroy intermediate-range missiles is subject to verification by national technical means and by on-site inspection.

THE VERIFICATION PROCEDURES ESTABLISHED BY THE TREATIES AND INSTRUMENTS IN QUESTION

It is useful first to classify the different procedures and then to examine their development.

Classification

The analysis of the procedures, their implementation, their shortcomings if any, and even the ways of remedying those shortcomings lie at the very heart of this book (see Parts II and III). If the procedures are divided, very roughly, into those relating to

factfinding and those relating to the legal-political assessment of the Parties' conduct, it can be gauged how diverse they are. In the preparations for this study it proved possible to identify ten different procedures having to do with factfinding and five relating in varying degrees to the assessment of the consistency of the Parties' conduct with their undertakings. The value of this classification is, of course, only relative. In particular, the classification places in the same category procedures that may be very different in practice. For a more complete picture, other classification criteria must also be applied, such as the conditions for the initiation of the procedures, the scope of the procedures, and whether they are unilateral or co-operative (see tables 2 and 4 annexed to the present part).

While there has recently been a revival of interest in the problems connected with verification and while innovative solutions have been or are being found for them, a rapid examination of the procedures will show that the treaties and instruments in force already contain a considerable range of provisions on verification. They must, however, be evaluated, and evaluated in a modern perspective.

Evolution of Procedures

Is there any evidence of evolution in the procedures set out in the treaties and instruments analysed here, particularly in the direction of strengthening? Roughly speaking, three phases may be discerned.

During the first of these phases, verification was difficult to organize, for it came up against both the political obstacle of the sovereignty of States and States' great sensitivity on all matters having to do with national security. Verification was perceived more as a means of constraint upon other States than as a mechanism for producing mutual benefit. This period corresponds to the pre-war and immediate post-war period, in the context of the cold war.

Later, in the 1960s and 1970s, the relative *détente* between the blocs made it possible not only to conclude numerous agreements but also to bypass the traditional obstacle of verification. Emphasis in this regard is also placed on technological progress and the role of satellites, which provided both the United States and the Soviet Union with national means of collecting basic data without entering the partner's territory. Satellites could legally and openly play a role that other intelligence-gathering techniques - notably illegal overflight and other methods of obtaining information - could only play in secret and with difficulty.

Lastly, for some 10 years or so, these procedures have seemed inadequate. On the one hand, they left too great a margin of uncertainty concerning the activities observed, and on the other the new agreements being envisaged called for more intrusive procedures, such as the destruction of intermediate-range missiles provided for by the 1987 INF Treaty. As a result, that Treaty represents a decisive breakthrough, at least in bilateral relations, for the 1986 Stockholm Document had already provided for inspections within national territory in a regional context.

This, admittedly by simplified division into three phases, shows that procedures, along with their complexity and diversity, have grown with time.

The division needs, however, to be modified. Provisions concerning on-site inspection, for example, were laid down as long ago as in the 1959 Antarctic Treaty and, with respect to the Moon, in the 1967 outer space Treaty, although it is true that they relate to areas outside State territory which are devoid, or virtually devoid, of human activity.

Furthermore, complexity must not be confused with efficiency, and procedures that seem attractive on paper may be of limited value in reality. For example, the 1963 partial test ban Treaty contains no verification procedures, but the prohibitions that it does contain are in keeping with the means that the principal nuclear Powers could spontaneously, and apparently effectively, employ. On the other hand, the provisions of the 1972 Convention on the prohibition of biological weapons have been queried on several occasions and from several sides.

Above all, the development of the procedures has focused essentially on their data collection element, on the monitoring aspect, and until very recently unilateral procedures seemed to prevail over co-operative ones. There has hardly been any progress with regard to the legal-political assessment of Parties' conduct and the appraisal of its consistency with the relevant undertakings, which constitutes the essence of verification. In itself, co-operative establishment of the basic data helps in resolving any difficulties that may arise between the Parties, for the data ought to be indisputable. It is not, however, adequate to cope with every contingency, and verification is like a structure of which the foundations have barely begun to rise. At least the work has started.

Annexes

Table 1: Main Obligations encountered in the Treaties and Instruments considered

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Geneva Protocol 1925														
Antarctic Treaty 1959														
Nuclear Test-Limitation Treaties 1974-1976														
Outer Space Treaty 1967														
Tlatelolco Treaty 1967														
NPT 1968														
Sea-Bed Treaty 1971														
Convention on Biological Weapons 1972														
ABM Treaty 1972														
SALT I/II 1972-1979														
ENMOD Convention 1977														
Moon Treaty 1979														
Conventional Weapons Convention 1981														
Rarotonga Treaty 1985														
Stockholm Document 1986														
INF Treaty 1987														

1 = Establishment of data base; 2 = Limitation of use; 3 = Limitation of deployment; 4 = Limitation of testing; 5 = Limitation of possession; 6 = Limitation of production; 7 = Limitation of transfer; 8 = Prohibition of use; 9 = Prohibition of deployment; 10 = Prohibition of testing; 11 = Prohibition of possession; 12 = Prohibition of production; 13 = Prohibition of transfer; 14 = Destruction.

Table 2: Monitoring and Verification Methods and Procedures encountered in the Treaties and Instruments considered

	Factfinding							Assessment procedures					
	0	1	2	3	4	5	6	7	8	9	10	11	12
Geneva Protocol 1925													
Antarctic Treaty 1959													
Nuclear Test-Limitation Treaties 1974-1976													
Outer Space Treaty 1967													
Tlatelolco Treaty 1967													
NPT 1968													
Sea-Bed Treaty 1971													
Convention on Biological Weapons 1972													
ABM Treaty 1972													
SALT I/II 1972-1979													
ENMOD Convention 1977													
Moon Treaty 1979													
Conventional Weapons Convention 1981													
Rarotonga Treaty 1985													
Stockholm Document 1987													
INF Treaty 1987													

0 = No method; 1 = National Technical Means; 2 = Exchange of data; 3 = Consultation; 4 = Control Posts/Observation; 5 = On-site inspection on a State territory; 6 = On-site inspection on a non-State territory; 7 = IAEA Safeguards; 8 = Review Conference; 9 = Submission of report; 10 = Consultation; 11 = Referral to an international organization; 12 = Referral to the International Court of Justice.

Explanatory note on Table 2

The list of monitoring and verification methods and procedures is by no means exhaustive. Only those methods and procedures encountered in the treaties and instruments considered in the present report have been retained. Other methods and/or procedures such as *collateral analysis* (i.e. a method involving perusal of the world press, scientific reports and other publicly available, pertinent material) or *unmanned in-situ sensors* (i.e. a method whereby unmanned stations with measuring instrumentation are located within a State territory) are hence not included.



Indicates methods and/or procedures which take effect through instruments or agreements concluded after the signature and/or ratification of the original treaty.

0. No methods for verification are provided for in the Treaty

1. NTM - Remote sensing from outside boundaries

This method refers to various technical means at the disposal of States and includes in particular National Technical Means - basically remote sensing techniques which do not physically intrude on another party's territories which are subject to its national sovereignty. The term NTM was coined in the bilateral US and USSR treaties signed in the early 1970s and denotes in particular satellite surveillance.

2. Exchange of data

This method involves an agreement by parties to a treaty to exchange data on armaments and/or military activities pertaining to the treaty.

3. Consultation

This method involves an agreement by parties to consult for the purpose of factfinding.

4. Control Posts/Observation (Residential On-site Inspection)*

A control post is essentially a stationary "permanent" inspection team for monitoring nearby military activities. Most commonly, control posts are used at such locations as transportation centres, airfields, railway stations, main-road junctions and ports in order to monitor military traffic.

Observation may also be a non-stationary manned observation post for the monitoring of international spaces such as the Sea-Bed or Outer Space or particular territories such as Antarctica.

Residential on-site inspection includes, for instance, Portal Monitoring.

5. Periodic On-site Inspection on State territory*

On-site inspection takes place on the territory of a State.

6. Periodic On-site Inspection on Non-State territory*

On-site inspection takes place on a territory over which no State has jurisdiction, including Outer Space, the Sea-Bed, the Moon, Antarctica etc.

7. IAEA safeguards

IAEA safeguards are designed to detect diversion of fissile materials from peaceful to military purposes. Four basic procedures are used: design review, maintenance of plant operating records, reports on plant operation and on-site inspections. IAEA safeguards are concluded through a separate agreement with the IAEA.

8. Review Conferences

The Review Conference is a general procedure which at regular intervals or upon request, permits assessment of *inter alia* treaty compliance.

9. Submission of report

Conclusions (i.e. results of factfinding) are laid out in a written report and submitted to other parties to the treaty.

10. Consultation

Results of factfinding are considered in consultation with other parties to the Treaty, *inter alia* as a means of working out discrepancies.

11. Referral to International Organizations

Results of factfinding or disagreements may be referred to an International Organization such as the UN Security Council for assessment.

12. Referral to ICJ or a judicial settlement

Results of factfinding or disagreements may be referred to the International Court of Justice for assessment.

*On-site inspections may be classified according to the permanence or non-permanence of the presence of an inspection team. With respect to a non-permanent inspection (i.e. the occasional or regular periodic on-site inspection) a distinction can be made between on-site inspection carried out on a territory of a "national" sovereign State and on-site inspection carried out on "international" territories (i.e. those over which no State has jurisdiction). The above distinction is particularly appropriate for the treaties and instruments considered here, since until recently, the idea of on-site inspections has been considered not in terms of its modalities, but, rather in terms of its intrusiveness on the territory of a national State.

Other classifications are certainly possible. For instance, a classification of on-site inspections according to modalities or trigger mechanisms would include the following categories: **Challenge on-site inspections** which (i) take effect as a consequence of an "anomaly" which cannot be resolved through other methods, (ii) are triggered by a demand or request, and (iii) may be *general* (i.e. without restrictions and without the right of refusal) or *limited or selective* (i.e. with restrictions as far as frequency, location, activity or equipment are concerned); and **Periodic on-site inspections**, which (i) are called for not upon a demand of a party which suspects non-compliance with the terms of the agreement, but as part of a regular procedure, and (ii) may be *general* (i.e. take effect at any time) or *limited or selective* (i.e. subject to restrictions with respect to frequency, location, activity or equipment).

On-site inspections could also be classified according to object, for example: *baseline inspections* to confirm or establish a database of treaty-limited items for monitoring or elimination; *elimination inspections* to verify destruction of weapons, equipment or facilities; *close-out inspections* to monitor that a facility has ceased production or storage of a treaty-limited item; and *continuous monitoring* to allow observation over time, by stationing observers at key points, establishing perimeter portal monitoring at production facilities, or by systematic inspection of facilities with instruments.

(See also: DUNN, A. Lewis and GORDON, Amy E. (eds.), *On-Site Inspection for Arms Control Verification: Pitfalls and Promise*, McLean Virginia, Center for National Security Negotiations, CNSN Paper, Vol. 1, No. 2, May 1989; or the Canadian study, *Verification in All Its Aspects, A Comprehensive Study on Arms Control and Disarmament Verification, Pursuant to UNGA Resolution 40/152 (O)*, April 1986, Annex VI. This list may also be found in the report of the UN Disarmament Commission A/CN.10/89.

Table 3: Ways by which Monitoring and Verification Methods are set in motion
Example: The Sea-Bed Treaty

	Factfinding							Assessment procedures					
	0	1	2	3	4	5	6	7	8	9	10	11	12
Notification													
Complaint/Request													
Regular Procedure													
Continuous/permanent procedure (i.e. may be undertaken at any time)													

0 = No method; 1 = National Technical Means; 2 = Exchange of data; 3 = Consultation; 4 = Control Posts/Observation; 5 = On-site inspection on a State territory; 6 = On-site inspection on a non-State territory; 7 = IAEA Safeguards; 8 = Review Conference; 9 = Submission of report; 10 = Consultation; 11 = Referral to an international organization; 12 = Referral to the International Court of Justice.

Explanatory note on Table 3

How are the different methods and procedures put into motion? Is this done by simple notification, upon request? Is it a regular procedure foreseen in the Treaty and following a certain pre-established pattern? Can the methods or procedures be put into motion at any time without prior notification, request or the fulfilment of certain conditions?

Example: The Sea-Bed Treaty

The Sea-Bed Treaty prohibits the deployment of nuclear weapons or any other types of weapons of mass destruction on the Sea-Bed (Art. I, para 1). This deployment prohibition may be verified through seven different methods.

(i,ii) Consultation (2x), as provided for in Art. III para 2 and 3, shall commence if, and when, doubts are expressed concerning the fulfilment of obligations. It is the obligation of the Party which has such doubts to request consultations with other Parties to the Treaty. The Sea-Bed Treaty does not provide for a permanent consultative forum. The consultation method is both an element of the process of factfinding and of the legal-political assessment process.

(iii) Observation, provided for in Art. III para 1, is a continuous permanent procedure (i.e. it may be undertaken at any time without the specific consent of other Parties).

(iv) On-site inspection on non-State territory (Art. III para 2 and 3): in case of doubt one may actually inspect (i.e. enter) the objects, structures or other facilities. The trigger mechanism is by notification of the other State Parties. The inspection may not be refused.

(v) Review Conference: the review conference is provided for in Art. VIII and is a regular procedure.

(vi) Submission of report (Art. III para 2, 3 and 4) provides for the circulation of a report by the party initiating verification procedures and is, hence, a regular procedure.

(vii) Referral to an International organization is also provided for in the Treaty, if, and when, serious doubts persist, and is, hence, part of a regular procedure. The referral is to the UN Security Council in accordance with the Charter of the United Nations.

Table 4: The Unilateral or Co-operative Character of Monitoring and Verification Methods
Example: The INF Treaty

	Factfinding							Assessment procedures					
	0	1	2	3	4	5	6	7	8	9	10	11	12
Unilateral													
Unilateral/Protected													
Concerned Parties Members to the Treaty													
Other Parties Members to the Treaty													
Special Consultative Body													
Specialized Institution													
International Organizations													
Third States													

0 = No method; 1 = National Technical Means; 2 = Exchange of data; 3 = Consultation; 4 = Control Posts/Observation; 5 = On-site inspection on a State territory; 6 = On-site inspection on a non-State territory; 7 = IAEA Safeguards; 8 = Review Conference; 9 = Submission of report; 10 = Consultation; 11 = Referral to an international organization; 12 = Referral to the International Court of Justice.

Explanatory note on Table 4

How unilateral or co-operative are the monitoring and verification methods and procedures?
 8 different modes have been retained:

- 1. Unilateral:** the method or procedure is carried out unilaterally by the State concerned.
- 2. Unilateral/Protected:** the method is carried out unilaterally by the State concerned, but the Treaty stipulates that the other Parties will not interfere with these methods or use deliberate concealment measures which would impede proper readings of the method(s) used. The *Unilateral Protected mode* has been utilized in particular in the bi-lateral US-USSR treaties and refers to their NTMs (see for instance the SALT or ABM Treaties).
- 3. Concerned Parties Member to the Treaty:** in this case the Parties concerned co-operate in factfinding and/or in the assessment process.
- 4. Other Parties Members to the Treaty:** this mode is used in connection with method 3 (above); for some methods or procedures, the other Parties to the Treaty may be called upon.
- 5. Special Consultative Body:** some treaties have established special consultative bodies, for example, the Standing Consultative Commission or the Special Verification Commission, and entrusted them

with specific monitoring and verification functions. Co-operation in this instance is loosely institutionalized.

6. Specialized Institution: monitoring or verification functions are entrusted either to an organization established by the Treaty (such as OPANAL) or a previously existing specialized organization (such as IAEA or the Nuclear Risk Reduction Centers).

7. International Organization: monitoring or verification functions are entrusted to an International Organization of general scope, usually the United Nations, but possibly to regional organizations such as OAU and OAS.

8. Third States not party to the Treaty: does the Treaty allow for co-operation with States non-party to the Treaty?

For each of the different methods and procedures the co-operative character has been established by answering the following questions:

- **NTM** - in what ways are NTM carried out? Unilateral, unilateral protected, or with the assistance of the concerned Parties - as stipulated, for example, in the INF Treaty, where silos must be opened upon request?
- **exchange of data** - exchange of data is between whom and/or through which body/institution?
- **consultation** - consultation is between whom and/or through which body/institution?
- **Control posts/observation** - who owns the control post; who owns the observation means; who operates it?
- **On-site inspections** - who carries out the inspection; who is entitled to carry out the inspection?
- **IAEA Safeguards** - who carries out the safeguards?
- **Review conferences** - who may ask for a review conference?
- **Submission of report** - who elaborates the report; who receives the report?
- **Consultation** - amongst whom is consultation and/or through which body/institution?
- **Referral to international organization or to the ICJ** - who refers?

Example: The INF Treaty

The INF Treaty imposes the obligation to establish a data base, a deployment, testing, possession and production prohibition, as well as a destruction obligation. These different obligations may be verified by way of 7 different methods.

The use of NTMs is protected and Art. XII, para 3, even provides for the active co-operation by the other Parties, in the sense that it provides for the opening up of the fixed structures which contain launchers.

With respect to on-site inspections it should be noted that these take place not only on the territories of the concerned Parties, but also on the territories of Third States.

All The other methods are all conducted between the Parties concerned. It may however be noted that for the Consultation procedures, a Special Consultative body has been established - the *Special Verification Commission*, which carries out both factfinding and assessment tasks. The exchange of data is conducted through a specialized existing institution, namely the *Nuclear Risk Reduction Center* (Art. XIII).

Part II

Existing Agreements and Instruments: Provisions and Practices of Verification

Chapter 1

The Geneva Protocol on Chemical and Biological Methods of Warfare (1925) and Related Procedures

Gilles Cottureau

The Geneva Protocol of 17 June 1925 prohibits the use in war of asphyxiating, poisonous or other gases, and bacteriological methods of warfare. It says nothing about the manufacture or storage of such weapons. The French Government is the depositary of this Treaty, which entered into force on 9 May 1926 and has since been ratified by many States.

It stems directly, of course, from the events of the First World War and the shocking use of mustard gas in the field. The first attack, at Ypres on 22 April 1915, caused many deaths and injuries and left a lasting impression on the minds of observers.

Formal texts had already been drawn up to ban the use of poisonous substances and gases. The 1874 Brussels Declaration prohibited the use of poisons and poisoned bullets in war. This ban was taken up in the 1899 and 1907 Conventions. The separate declaration of 29 July 1899 relates to asphyxiating gases. In it the contracting Powers renounced "the use of projectiles the sole object of which is the diffusion of asphyxiating or deleterious gases".¹

Prior to 1925, in the Versailles Treaty, the Allies had forbidden Germany - which had been responsible for the use of such weapons in the war - to manufacture or import poisonous gases.²

Notwithstanding the 1925 Treaty, numerous violations have occurred since it entered into force. Two major instances of the use of gas between the two World Wars deserve mention. Italy used this type of weapon against Abyssinia. After denying having used gas, it then justified its conduct on the grounds that its action was not unlawful in the context of reprisals - even though it had been a Party to the Protocol since 1928. Japan also used chemical weapons in its conflict with China against both troops and civilian populations.

After the Second World War, during which chemical weapon stockpiles expanded, the arsenal became more extensive. Irritants, which made up the bulk of chemical weapons, were joined by nerve agents, and later more sophisticated agents were developed which caused limited incapacity on the part of the victim without

¹ J. Brown Scott, *Les conférences de la paix de La Haye de 1899 et 1907*, Paris, Pedone, 1927. Appendice p. 27. This text originates in a Russian proposal put forward on 31 May 1899; see W. M. Van Eysinga, "La guerre chimique et le mouvement pour sa répression", *RCADI*, 1927, I, p. 346.

² A/171 of the Treaty. Similar provisions exist in the other treaties putting an end to war. See Th. Bernauer, *The Projected Chemical Weapons Convention: A Guide to the Negotiation in the Conference on Disarmament*, UNIDIR, 1990, p. 11.

automatically provoking death or permanent injury. In 1947 the United Nations expressed concern at the proliferation of weapons of mass destruction.

The United States was accused of using such weapons in the Korean conflict in 1951 and 1952. Later, Egypt was suspected of similar acts in its intervention in the civil war in Yemen. The United States and Australia had occasion to use chemicals during the Viet Nam war, but they argued that their actions did not constitute a use of weapons in the strict sense, and therefore were not subject to the ban set forth in the Protocol, which in strict legal terms did not apply to the United States at the time. The United States became a Party to the Protocol only after leaving Viet Nam in 1975.³

There is no doubt that the Iran-Iraq conflict saw the use of chemical weapons beginning in 1981, although the two States are parties to the Protocol, Iran since 5 November 1929 and Iraq since 8 September 1931.

In addition to these classic cases, mention has been made on many occasions of information not reliably verified concerning the use of gas,⁴ specifically in Afghanistan and South-East Asia.

Since the use of chemical weapons may reflect a degree of erosion of the 1925 instrument, States have on several occasions sought to reinforce its authority by means of United Nations resolutions. The call for a more comprehensive convention which takes account of modern capabilities has prompted a variety of reactions.

The Protocol of 1925 covers both chemical weapons and bacteriological weapons. Some States, including France, felt strongly that the link between these two forms of armaments should be retained, considering that any separation would indirectly raise doubts concerning elements which were covered by the Protocol but were not covered by the new instrument.

Nevertheless, on 10 July 1969 the United Kingdom put forward a draft convention for the banning of bacteriological weapons. London's motivation lay in its view that the Protocol was inadequate.

Some States - notably the United States and Japan - were not parties. Others had reserved the right to use the banned weapons against non-parties or States that had breached the treaty obligations. The discussions and disagreements as to whether customary norms coincided with the written provisions were viewed by the English as a harmful source of imprecision. In London's eyes the text itself left the door open

³ President Nixon's statement deciding to call on the Senate to agree to the Protocol of 1925 was made on 25 November 1969.

⁴ Viet Nam against Laos and Cambodia, the USSR in Afghanistan but also Ethiopia in Eritrea and Libya in Chad, Burma against the Shan rebels, South Africa against SWAPO in 1978 and the Angolan and Cuban forces against UNITA in 1985. This information is not proven. It may be compared with the "yellow rain" incident (1981), when a yellow powder fell on Thai and Cambodian villages and was attributed by the United States to Viet Nam.

According to specialists, the explanation might lie in bee excrement and not mycotoxins. J. P. Perry-Robinson and M. Meselson, "Yellow rain: the story collapses", *Foreign Policy*, autumn 1987, pp. 100-117. See also G. Fischer, "La Conférence d'examen de la Convention interdisant les armes bactériologiques ou à toxines", *AFDI*, 1980, pp. 89 *et seq.*, and particularly p. 91, note 10. See the contribution to that work by A. Karkoszka.

to abuses by singling out non-bacteriological microbiological agents and distinguishing war from other conflicts which did not warrant such a description in the strict sense.⁵

The USSR then introduced its draft for the prohibition of the development, production and stockpiling and acquisition of chemical and bacteriological weapons.⁶ The General Assembly voted overwhelmingly for a new convention banning these two categories of weapons.⁷ The USSR, changing its position, then presented a draft dealing only with biological or toxin weapons. This draft, revised after lengthy discussions, became acceptable to the United States. With the two major Powers in agreement on the non-comprehensive nature of the instrument to be developed, the General Assembly of the United Nations adopted resolution 2826 (XXVI) on 16 December 1971 by 110 votes to none (Albania and China being absent), with one abstention (France), adopting the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction.⁸

However, the negotiations on chemical weapons did not cease. The Final Act of the Paris Conference (organized from 1 to 11 January 1989), which was later distributed as a document of the Conference on Disarmament, stressed "the necessity of concluding, at an early date, a convention on the prohibition of the development, production, stockpiling and use of all chemical weapons, and on their destruction". After making this point, the Final Act expressly tackles verification, since the convention is required to be not only global and comprehensive but also "effectively verifiable".⁹ The chemical industry, which plays a vital role, had an opportunity to express its views during the Canberra Conference from 18 to 22 September 1989, at which it held discussions with 66 government delegations.

This is the background against which the text of the Protocol of 1925 should be read today.

Significant passages contain both preambular elements and a declaration.

Whereas the use in war of asphyxiating, poisonous or other gases, and of all analogous liquids, materials or devices, has been justly condemned by the general opinion of the civilized world; and

Whereas the prohibition of such use has been declared in Treaties to which the majority of Powers of the world are Parties; and

To the end that this prohibition shall be universally accepted as a part of International Law, binding alike the conscience and the practice of nations;

⁵ See the document analysed in *AFDI*, 1969, p. 127, document ENDC/231.

⁶ See the contribution by Mr. A. Karkoska.

⁷ Resolution 2603 B.III., XXIV.

⁸ A resolution which, for obvious political reasons, and in order to avoid any interpretation suggesting that the United Nations is not interested in chemical weapons, or assigns priority to bacteriological weapons, is to be read in the context of resolutions 2825 (XXVI) on general and complete disarmament and 2827 (XXVI) on the question of chemical and bacteriological (biological) weapons.

⁹ The text of the Final Act may be found in *UNIDIR Newsletter*, Vol. 2, No. 1, March 1989.

Declare:

That the High Contracting Parties, so far as they are not already Parties to Treaties prohibiting such use, accept this prohibition, agree to extend this prohibition to the use of bacteriological methods of warfare and agree to be bound as between themselves according to the terms of this declaration

This text takes up the enumeration of gases, liquids or analogous devices in Article 171 of the Versailles Treaty, which forbade Germany to manufacture or import such products. This special restriction applied even though the text makes it clear that the use of such products in war was already well established.

In this context, contemporary observers¹⁰ considered that the Protocol marked a step backwards by giving the impression that it would have to come into force before States not parties to other instruments were required to renounce the use of such products in war.

In contrast, the July 1969 report prepared by a Group of Experts appointed by the Secretary-General at the request of the General Assembly on the recommendation of the Geneva Committee considers that the 1925 text, taken together with the reservations "established a custom"¹¹ of non-first-use.

The Protocol of 1925 contains no provisions on the preparation and stockpiling of chemical and bacteriological weapons; most importantly, it contains no provisions on verification.

A novel solution is emerging in practice.

From the earliest stages of thinking about chemical warfare, negotiators have clearly perceived the specific problem attaching to these weapons. They derive directly - subject to a few hours' or a few days' processing - from substances that are indispensable for non-military chemical or biochemical operations. In contrast to other means of destruction, it is a difficult task to distinguish between a hazardous substance which is essential to industrial activity and a weapon in the strict sense.

In the absence of machinery set up under the treaty, the United Nations, after a period of uncertainty, adopted resolutions intended to strengthen the effectiveness of the ban by means of checks. They assign a key role to the Secretary-General and provide for a complex mechanism of consultation and investigation designed to promote observance of the ban.

Our examination may be articulated by first studying the legal foundations of action by the United Nations and then analysing the investigation procedures themselves.

¹⁰ Albert de la Pradelle, W. M. Van Eysinga, *RCADI*, 1927, 1.

¹¹ A/7575, Section 7; see G. Fischer, "Chronique de contrôle des armements", *AFDI*, 1969, p. 128.

I - The Legal Foundations of Action by the United Nations

At the United Nations, pending the conclusion of a chemical weapons convention and in order to ward off the risk of erosion of the 1925 ban on the use of such weapons, immediate measures were sought.

The idea would not secure rapid acceptance from all Parties. At the outset, the Assembly suggested enhancing the role of the Secretary-General, who would report to all the Members and the Assembly itself. Following protests, a parallel practice, not founded on a specific resolution, was instituted before the Security Council; this practice was made necessary by the urgent need to intervene in one of the biggest post-war conflicts, in which chemical weapons were undoubtedly used. As the idea gained ground, the movement culminated in consensus for the adoption of a text which endorsed the Secretary-General's action and may serve as a basis for devising complex investigation methods for verifying the use of the arms in question.

A RESOLUTION CONTESTED

The lack of machinery for monitoring and verification in the Protocol of 1925 has on several occasions prompted States and the United Nations to seek ways and means of overseeing the application of the instrument.

In June 1963, at the time of the Egypt-Yemen crisis, the Secretary-General asked General Von Horn, the Head of the United Nations Observer Mission in Yemen, to undertake an investigation. At the time, Yemen was not a party to any treaty banning chemical weapons.¹²

More recently, on 10 March 1980, in the midst of a crisis between the two super-Powers concerning the use of chemical weapons in Asia, the United States asked at the United Nations Commission on Human Rights for an independent committee of inquiry to be set up to examine the allegations that the military forces of "socialist" countries had used chemical weapons in Afghanistan, Cambodia and Laos. The Commission took no action on this request.¹³

At its thirty-fifth session, the General Assembly adopted a resolution recommending "an objective inquiry into the most worrying information concerning the recent use of chemical weapons",¹⁴ to be conducted by a group of independent experts. This inquiry mission was able to visit only Thailand and Pakistan. The Commission under Major-General Ezz, which was hampered in its investigations as a result of indirect access to the necessary information, found that there was indirect evidence and a strong presumption of the use of banned weapons. In 1981, a cautious report reached no conclusions concerning the use of chemical agents in South-East

¹² H. Meyrowitz, "Les armes psychochimiques et le droit international", *AFDI*, 1964, p. 110, note 81.

¹³ *AFDI*, 1980, p. 91.

¹⁴ A/Res/35/144 C of 12 December 1980.

Asia; in 1982, a second report acknowledged the likelihood that harassing agents had been used in Afghanistan to dislodge combatants from underground networks.¹⁵

In this period of acute tension, in which there was a proliferation of allegations - serious or not - that the Protocol of 1925 was being ignored, France put forward a resolution. Feeling that it had a prime interest in threats to the instrument of which it was the depositary, France proposed a text which, after being sponsored by other States, became resolution 37/98 D.¹⁶

The principal purpose of this resolution is to enable the Secretary-General to organize factfinding investigations through the use of qualified experts and to report to all Member States and the General Assembly in the event of an allegation of unlawful conduct under the Protocol or the relevant rules of customary international law.

This twin reference to the Protocol and to customary law offers grounds for investigations both *vis-à-vis* States Parties to the Protocol and *vis-à-vis* non-parties governed by custom.

The Protocol is often regarded as the expression of a rule or the formulation of a pre-existing custom.

Indeed, there are divergent views as to the weapons covered by each of the types of norm. The history of the preparatory work on the Protocol of 1925 shows clearly that, as far as its authors were concerned, all types of gases were included in the ban. Yet States maintained that only deadly or highly incapacitating gases were covered. The United States considered that the defoliants used in Viet Nam were not unlawful, any more than tear-gas.¹⁷

Resolution 37/98 D, conferring an investigative power on the Secretary-General, gave rise to considerable legal controversy. The resolution, which was adopted by only 86 votes, was opposed by 19 socialist States, including the USSR, while there were 33 abstentions, including Iraq. Iran was absent. As the text of the Protocol contains no verification procedures, those opposed to the resolution maintained that it was in fact a modification of a treaty text which should have followed the procedures laid down for the revision of treaties. In their view, the irregularity was all the more dangerous as it involved modification by the United Nations of an agreement between States. Furthermore, the investigative function inflated the role of the Secretary-General, for whom the Charter acknowledged no specific role in monitoring disarmament agreements.

In reply to these arguments, the States supporting the text indicated that a resolution could not have any other scope than that of a resolution, and that therefore there were no grounds for fears relating to treaty modification; the explanation was strengthened by the reference to custom forbidding arms of this type. Finally, Article

¹⁵ A/36 613, 20 November 1981, A/37 259 of 1 December 1982.

¹⁶ Serge Sur, "La Résolution A/37/98 D du 13 décembre 1982 et les procédures d'enquête en cas d'usage allégué d'armes chimiques et bactériologiques (biologiques)", *AFDI*, 1984, pp. 93 *et seq.*

¹⁷ Concerning the distinction between the norm in customary law and the Treaty norm, see Meyrowitz, *op. cit.*, *AFDI*, 1964.

11 of the Charter could be cited as prior practice. Article 14 could doubtless have been cited in so far as it authorized the Assembly to "recommend measures for the peaceful adjustment of any situation, regardless of origin".

The opposition of the Soviet Union and the socialist countries diminished the impact of the resolution. On the one hand, the legal arguments were heard with some sympathy by States which were basically favourable to verification but concerned on grounds of principle at a measure which, with the actions to be pursued by the Secretary-General, would have the effect of over-extending the role of the Assembly in security matters. On the other hand - a more political argument - the Soviet authorities, which were the target at the time, regarded as Western propaganda any methods that could be turned against them.

With the Assembly's authority challenged, United Nations practice concerning a local conflict not directly involving either of the two super-Powers developed on a different foundation.

PRACTICE IN THE IRAN-IRAQ CONFLICT

On 3 November 1983, Iran sent the United Nations a communication accusing Iraq of using chemical weapons since April 1981. The Government of Iraq rejected these accusations and refused to accept an inquiry mission sent by the Secretary-General. Iran repeated its accusations several times.

Without making use of resolution 37/98, the Secretary-General decided to send four specialists, who went to Iran from 13 to 19 March 1984 and handed in their report on 21 March 1984.¹⁸ They unanimously concluded that tabun and mustard gas had been used. Meeting on 30 March 1984, the Security Council authorized its President to make a Statement and to reaffirm the requirements arising from the Protocol of 1925. The Government of Iraq considered itself to have been totally cleared by the conclusions of the report: "The Iraqi Government has no comment to make on the report and does not consider itself concerned with it. Iraq has not used such weapons, and if the experts sent by the Secretary-General found substances of this kind in some Iranian areas, Iran is the one which bears responsibility for that".

Iran felt that in order to overcome the immobility of the United Nations, the Secretary-General should act on the basis of resolution 37/98 D of 13 December 1982. In Iran's view, this obligation "of the Secretary-General of the United Nations in fulfilment of resolution 37/98 D does not require the involvement of any other organ of the United Nations".¹⁹ In order to avoid controversy concerning the validity and scope of the resolution, the Secretary-General did not rely on it to justify the expert mission. To justify the need to establish the facts, he put forward the following argument:

¹⁸ 3/16438 of 27 March 1984.

¹⁹ P. Tavernier, "La guerre du Golfe: quelques aspects de l'application du droit des conflits armés et du droit humanitaire", *AFDI*, 1984, p. 52.

Conscious of the humanitarian principles embodied in the Charter and of the moral responsibilities vested in his office, the Secretary-General felt duty-bound to ascertain the facts and, to that end, requested four eminent specialists in their respective fields to undertake a factfinding visit to Iran.²⁰

The visit did not occur in a vacuum, since at the head of his report the Secretary-General mentioned Security Council resolution 540 of 21 October 1983 requesting him to continue his mediation efforts.

Thus there is a degree of ambiguity here. Is it the Security Council's invitation that serves as justification for the Secretary-General, or is it quite simply the Secretary-General who, in a context of merely establishing the facts and in no way making a judgement or a legal assessment, thus places himself in a position to develop his conviction so as to be able to offer an informed opinion under Article 99?

Factfinding, even without any legal judgement, cannot remain unconnected with such a judgement. In this regard, when dealing with the violation of an instrument which forbids the use of chemical or bacteriological weapons, even if responsibility is not clearly assigned, the case falls under the Security Council's monopoly of action. The reference to resolution 540 would seem to have been made in order to place the action within the framework of a task assigned by the Security Council in an area falling exclusively within its competence.

On the other hand, the Secretary-General's reference to his moral responsibilities and personal judgement leads one to think that he has placed himself within the context of his own competence. In a sense, his action involving only factfinding would be in keeping with the "spirit" of Article 99 of the Charter. In order to be able to draw the Council's attention, the Secretary-General must take a view on whether international security is threatened. Indeed, starting with his first report, Mr. Pérez de Cuéllar affirmed the need to "carry out effectively the preventive role foreseen for the Secretary-General under Article 99", and his determination "to develop a wider and more systematic capacity for factfinding in potential conflict areas".²¹ Moreover, it was before the Security Council that the experts' report was defended, not the General Assembly; it was the Council that continued to follow up this action.

On 25 April 1985 the President of the Security Council made a Statement on behalf of the Members of the Council. They noted the use of chemical weapons against Iranian soldiers in March 1985, referring to the conclusions in the report of the medical specialist appointed by the Secretary-General and also drawing on the conclusions stemming from Mr. Pérez de Cuéllar's visit to Iran and Iraq, as set out in his report of 12 April.²² In that document, the Secretary-General, without expressly

²⁰ S/16433, section 5.

²¹ See the commentary on Article 99 by M. C. Smouts in *La Charte des Nations Unies*. J. P. Cot and A. Pellet (eds.), Paris/Bruxelles, Economica Bruylant.

²² S/17127 and Add.1 (24-30 April 1985) S/17097, 12 April 1985 for Secretary-General's visit.

mentioning Article 99, pointed out that he was "legally obliged under recognized international humanitarian rules to try to mitigate" the effects of the conflict.²³

In 1986, the Council unanimously adopted a resolution on 24 February deploring "the violation of international humanitarian law and other laws of armed conflict and, in particular, the use of chemical weapons contrary to obligations under the 1925 Geneva Protocol". At the request of the Secretary-General, a team of specialists visited Iran from 26 February to 3 March; Mr. Pérez de Cuéllar made a report on the mission on 12 March²⁴ and the President of the Security Council again condemned the violations on 21 March 1986.²⁵

Only in 1987 was the team of experts able to enter Iraq for the first time, while it was in Iran for the third time in May 1987.²⁶ This marked the start of a change of position which was confirmed in mid-year; on 2 July, Iraq acknowledged having used chemical weapons against Iran.²⁷ On 24 August, the Security Council adopted a resolution threatening to react towards Governments tempted to use chemical weapons.

The last year of the war was marked by a recrudescence of hostilities. Four missions were dispatched by the Secretary-General. The first of them supplied the facts mentioned in its first report:²⁸ mustard gas and an incapacitating agent had been used on both sides on civilians and military personnel. On this basis, the Council, in an unanimous resolution of 9 May 1988, vigorously condemned "the continued use of chemical weapons in the Iran-Iraq conflict contrary to the obligations under the Geneva Protocol".

Once again, shortly before the complete end of the war, the Council condemned the use of chemical weapons and expressed a wish for investigations. On 26 August 1988, using a formula very close to the resolution adopted at the end of 1987, it encouraged the Secretary-General

to carry out promptly investigations in response to allegations brought to his attention by any Member State concerning the possible use of chemical and bacteriological (biological) or toxin weapons that may constitute a violation of the 1925 Geneva Protocol or other relevant rules of customary international law, in order to ascertain the facts of the matter, and to report the results.²⁹

²³ Above-mentioned report. See *AFDI*, 1985, p. 558.

²⁴ S/17911 and Add.1, 12 March 1986.

²⁵ S/PV 2667, 21 March 1986. The Security Council had before it 26 documents mentioning the use of chemical weapons: 4 Iraqi, 20 Iranian and 2 miscellaneous.

²⁶ *Chronique des faits*, *AFDI*, 1987. The use of gas was condemned by the United States, which imposed sanctions on the Iraqis for their use of arms of this type against the Kurdish population.

²⁷ S/18852 and Add.1, 8 and 18 May 1987.

²⁸ S/19823 for the three others S/20060 and Add.1, S/20063, S/20134. See Th. Bernauer, *The Projected Chemical Weapons Convention: a Guide to the Negotiations in the Conference on Disarmament*, UNIDIR, 1990.

²⁹ S/Res.620, 26 August 1988.

THE CONSENSUS

The constant efforts of the Secretary-General and his reports to the Council encouraged the Assembly to pursue "measures to uphold the authority of the 1925 Geneva Protocol and to support the conclusion of a chemical weapons convention". resolution 42/37 C of 30 November 1987 marked the culmination of a process which provided a justification for the investigations and opened up an intermediate period in which, pending a new, more comprehensive text, the Secretary-General had to be able to conduct investigations. The text, which is close in structure to the resolution of 13 December 1982, did not meet a hostile reception. A difficult vote was replaced by consensus adoption.

Political circumstances were, of course, different. The USSR had changed its policy. Disagreement between the two super-Powers on chemical weapons matters had given way to a period of trust. The vital on-site monitoring which the Soviet side still rejected was out of place at a time when Russians and Americans were in agreement on on-site verification for the elimination of intermediate-range missiles. Fear of surreptitious treaty modification by means of a resolution lacking full support was also obsolete. It was by consensus that the resolution was adopted and the monitoring measures were provided for in the new convention - the text covering the development, manufacture, stockpiling and use of chemical weapons, as well as their destruction.

Like the 1982 text, that of 1987 falls within the context of the provisions of the Protocol and the other relevant rules of customary international law.

The procedures designed to allow a rapid and impartial investigation for the purpose of contributing to upholding the authority of the Protocol, which was the objective in 1982, became rapid impartial investigations to strengthen the authority of the text, in 1987. These investigations, which some might view as based solely - and, for a few States, questionably - on the 1982 text, are regarded as among the components of a broader arsenal at the disposal of the Secretary-General, since the 1987 resolution notes "the procedures available to him in support of the principles and objectives of the . . . Geneva Protocol" - temporary procedures which will have to be reviewed with the new convention.

This three-stage experience reveals the flexibility of United Nations practice once a goal has been clearly identified. To enable the application of the Protocol of 1925 to be verified, the first approach was made to the Assembly. This solution was perhaps not ideal at that moment. When the Assembly resolution was challenged, use was made of a parallel practice but one which was no longer tied to resolution 37/98 D. The steps taken by the Secretary-General, which were identical to those he could have taken in pursuance of that text, prompted no protests on the part of the socialist countries.

The third stage was that of consensus. It is necessary not only to take into account resolution 42/37 C of 30 November 1987, but also to compare it with the provisions of resolution 620 of 26 August 1988. The very severe criticisms which

could still be found in the American press at the time of the Secretary-General's second report disappeared afterwards.

Thus it can be argued that the entire process occurred as if step-by-step: from the contested Assembly to the consensus Assembly, via the Council and the action taken by the Secretary-General himself, there had evolved an independent investigation procedure, led by the Secretary-General of the United Nations, which was available to any Member State and could warrant its entire trust. It can also be used at the request of the Security Council and by the Secretary-General in the context of his moral responsibilities.

II - The Investigation

The two resolutions adopted in 1982 and 1987, in order to update the procedures to strengthen the Protocol, were supplemented by the work carried out by experts as stipulated in resolution 43/74 A of 7 December 1988.

The texts entrust the Secretary-General with an investigatory role. This responsibility is placed on him both personally and in a factitive sense. The Secretary-General investigates, but above all he arranges for an investigation.

In the 30 November 1987 version, the General Assembly "requests the Secretary-General to carry out investigations in response to reports that may be brought to his attention by any Member State concerning the possible use of chemical and bacteriological (biological) or toxin weapons that may constitute a violation of the 1925 Geneva Protocol or other relevant rules of customary international law in order to ascertain the facts of the matter, and to report promptly the results of any such investigation to all Member States"; the investigation is initiated if the Secretary-General so decides. He may do so if, when his attention is drawn to the violation of an obligation in customary law or in a treaty, he considers that there are serious grounds for taking up such an assertion. The investigation launched is conducted in a similar way to the drafting of a preparatory document for a legal evaluation, and leads to a report.

THE DECISION TO UNDERTAKE AN INVESTIGATION

Under the 1982 and 1987 resolutions, the Secretary-General does not have the power to decide alone, *proprio motu*, that chemical weapons have been used. The Secretary-General verifies allegations (accusations?) made by one or more States. The use of banned weapons must be notified by a Member State. This was how the process was initiated in the Middle East conflict, even though the response arrived belatedly.

The information - the initial alert - must meet certain minimum requirements as to substance. The State must draw up a report constructed in such a way that it enables the Secretary-General to be in a position to take a decision. In order to

facilitate this, the 1989 group of experts³⁰ made provision to standardize the type of information to be supplied by any Member State reporting the possible use of chemical or bacteriological weapons. The identification of the location, analysis of the circumstances of the attack, the effects on human beings, animals and plants, the preparation of samples and requests for assistance are set out in 14 points.³¹

In his task of assessing the report, the Secretary-General may draw on the views of consultant experts. The consultant(s), of whom there may be one or more, is (are) at the service of the Secretary-General. They are skilled experts, proposed by Member States at the request of the Secretary-General, whose names, continuously updated, appear on a list. They are paid for their services, should be available for extremely rapid consultancies, and must have a rather wide range of skills. Using these consultants should enable the Secretary-General to take a well-informed view of the legal, scientific, military, logistic or other aspects. Using equipment provided by the States which put their names forward, or facilities made available by other States to ensure that the Secretary-General is not restricted in his choice of consultant experts purely because of logistics, they have a twofold task. At the request of the Secretary-General - and under his responsibility - they must evaluate the report made by the Member State alleging the use of CBT weapons and assist him in conducting the investigation. They must also develop measures necessary for the smooth running of the investigations.³²

The Secretary-General's assessment may lead him either to abandon the investigation or to launch it.

Obviously, the Secretary-General must abandon the investigation if he is not convinced by the initial report made by the State. In doubtful cases he may engage in an exchange of information with the reporting State; it will be short, falling within a period of 24 to 36 hours. Other information coming from other States may be used. The Secretary-General is not, as it were, limited to the information supplied by the one State. Everything that is drawn to his attention and might facilitate the investigation may be used.

It is for the Secretary-General to decide whether the investigation is justified. If it is not, because the arguments set forward lack weight, the grounds will be indicated to the State. But even if it is justified, an investigation will not take place in every case and may be abandoned in exceptional circumstances. Certain technical factors, such as the passage of time, can make it impossible to establish the alleged facts objectively; the investigation will then no longer be justified. The same will be true if the team of qualified experts cannot be guaranteed access, although the Secretary-General may gauge the possibility of seeking evidence in a neighbouring or

³⁰ Which met from 31 July to 11 August 1989. Its proceedings underpin the Secretary-General's report mentioned above.

³¹ See the list attached.

³² Five countries supplied the names of experts in 1989: Bulgaria, Italy, USSR, Israel and Iran. Only Bulgaria made a clear distinction between consultant experts and qualified experts. See the above-mentioned report, annex II.

nearby country. Whenever the team is not sent, including cases where it is not possible to use neighbours, the Secretary-General must include in his report an assessment of the information available to him and must explain why he is not dispatching a team to the site. In other words, such a setback does not obviate the need to follow developments in the region closely and to grasp any chance that may still arise to send a team of qualified experts to the site.

The decision is for the Secretary-General to take. It is for him to appraise the information provided by the reporting State and weigh up what is possible in technical and material terms. If convinced, he launches the investigation procedure on his responsibility. When an obvious risk exists such as could be perceived in the conflict between Baghdad and Teheran, the Secretary-General may hesitate to initiate the procedure.

THE TEAM OF EXPERTS DURING THE INVESTIGATION

When the facts seem to warrant an investigation, a rapid decision must be taken within 24 hours and the team of qualified experts be at the site within 48 hours.

The qualified experts, persons of proven competence known in advance to the Secretariat, will benefit from protection in a number of respects. At the site they will act, see, take samples and have them analysed so as to facilitate their writing of a report.

The qualified experts are competent professionals on a list provided by the States. On starting an investigation they take equipment which has also been made available by the States on request. The Secretary-General draws on this list in setting up the team.

The Secretary-General may evaluate the competence of these experts, as reported by the States, taking guidance from other consultant experts. In short, every care is taken to ensure that the scientific quality of any observations and measurements made is totally above suspicion.

For their part, the States must take appropriate steps to provide the team of experts with safe working conditions and full freedom of movement and judgement. An observer appointed by the State hosting the investigation will accompany the team; he must ensure that nothing delays or interrupts the investigation. Team Members should also benefit from the provisions of Article 6 of the Convention on the Privileges and Immunities of the United Nations of 13 February 1946.

All questions relating to logistics, freedom of movement, meetings with people, the taking of samples and so on should be covered in an agreement specifying the obligations of the State visited by such an investigating team.

Neighbouring States, and third States in general, may be induced to assist by allowing the transit of people, but also items - sometimes very dangerous ones - that have been taken as samples. They may also open appropriate laboratories under the supervision of the Secretary-General.

The report will be very detailed, taking the form of a listing or record by the investigator. The requirement for precision may be double-edged: the detailed list of operations to be carried out seeks to be totally explicit; from this viewpoint, notes and appendices may be regarded as aids to verification. However, there is also the risk that a State may refuse to agree to anything that has not been laid down. Nothing is easier than to identify a specific point that has not been listed and to bring the whole investigatory machinery to a halt. The risk is nevertheless small, since in the end the whole system relies on good will in implementing the resolutions and the relevant guidelines.

Each expert remains free to make his or her own assessment without expressing an opinion on the violation. After having seen, measured and heard governments, victims and representatives of international organizations as appropriate, the team will submit its report. This should indicate the composition of the team at the various stages of the investigation, including the stage of report preparation; all the relevant data collected; a description of the methods used, places visited and the period of *in situ* sample-taking; an account of evidence, interviews, medical results, scientific analyses and documents examined; and place and date of discussion of the report.

Naturally, it should also include the joint conclusions of the group, indicating the extent of the proven allegations and, if possible, evaluating their likely truth.

Each expert may make his or her individual opinion known by expressing disagreement with the majority or a divergence on any one of the points covered.

It will be noted, then, that the investigation procedure combines methods which are to some degree intrusive though this aspect is kept as minimal as possible under the terms of the note which restates a position agreed in the Disarmament Commission. The investigation may be conducted in part from a border or a neighbouring area. But of course the heart of the procedure is intrusive: experts with their measuring instruments must, in principle and for a specific period of time, enter the territory.

The investigation, or at least the mission of the team of experts, is collegiate in nature and gives rise to a report adopted by vote.

It involves third Parties, neighbouring States, States supplying experts, products, equipment and laboratories.

The process is international in nature and stands on an institutional foundation which entails an assessment of the facts in terms of their extent and their harmfulness. However, as will be seen more clearly below, no juridical assessment can be claimed in a strict sense. This lack of conceptualization of verification in juridical terms is no doubt the reason for the abundant detail of this specific type of verification associated with the application of two treaties, the Charter and the Protocol of 1925.

On completion of the investigation, the Secretary-General must promptly inform the Member States of the results.

EFFECTIVENESS

The investigative operation for which the resolutions make provision, and which the working group has set out in an extremely detailed manner for the purpose of providing guidance, is based exclusively on the good will of the States concerned. In legal terms nothing can oblige them to accept these developments in view of the fact that General Assembly resolutions alone serve as a basis for the activities of the Secretary-General. Investigations require the co-operation of the States concerned.

The verification is limited to the consequences of a violation for the purpose of establishing its existence by tracing a line back from effect to cause. If traces of banned products are found, an obligation may have been ignored. It is not the role of the investigation to establish the existence of chemical stockpiles, their extent or their rate of growth.

But the texts do not provide for any specific sanction. The Secretary-General informs the States promptly. In the 1987 text he is not required to notify the Assembly, whereas he was required to do so in the 1982 text. The closing formulae also differ significantly. Resolution 37/98 D requests the Secretary-General to report to the Assembly personally on the implementation of the resolution, while the subsequent resolution, 42/37 C, requests him only to submit a report on its implementation.

The procedure is not one of surveillance - it does not precede but follows the abrogation of an obligation; without itself providing for sanctions, it is closer to an inquiry than a verification. The parallel with an inquisitorial investigating procedure is in fact very clear. The State hosting the visit may possibly be the victim of aggression; hence the absence of any accusation including a hearing or a genuine "defence". Consequently, the "investigation" must fit within a set of detailed rules, strict respect for which serves to guarantee the veracity of the information transmitted. The major risk facing such an investigation is not that it will be denounced as unfair, but as inaccurate. The investigation process, probably drawn up by an international team, is viewed in practice as a means of benefiting the victim; hence the slightest error concerning a date, initial location, density or concentration of a gas of a bacteriological type - spotted and denounced by the alleged perpetrator - could jeopardize the whole process.

The investigation is not truly a confidence-building measure designed to assure partners that an obligation is being complied with. As an *a posteriori* inspection it occurs after a suspected violation of the norm. Far from being a direct means of ensuring that the obligation is respected, it is the consequence of the obligation's being ignored. It would be a means of verification only if it constituted a condition for triggering a sanction mechanism.

The investigation therefore seeks to collect evidence of a violation, and thereby acknowledges that the alleged violation has some substance. However indirectly as *prima facie* it records facts that may be used to evaluate what is unlawful, it may help to strengthen the ban.

It may do so from the moment that the results of the investigative procedure are taken into account by an authority other than the Secretary-General. The confirmed use of gas brings into play Chapter VII of the Charter, under which the Security Council has the power to decide on sanctions if its Members agree. It can do no harm to furnish the Council with detailed information. *A priori*, it cannot but throw light on the question, and in that way the Council will take a decision on the basis of better information. The investigation is like a pawn on a chess-board which is both complex and familiar. It could play a decisive role or serve no purpose. Here, everything depends on the circumstances. The Iran-Iraq affair shows that this role is not non-existent. But the usual belated and cautious condemnation obtained *a posteriori* gives a hint of what one may realistically expect.

Aside from sanctions, the resolutions strengthen - or can strengthen - the ban in the Geneva Protocol. Indeed, this is the avowed aim of the Secretary-General himself. The use of chemical weapons undermines a text which, he says, "has been a hopeful symbol of mankind's desire and its ability to mitigate the effects of war through universal adherence to humanitarian concerns"; such undermining is an awesome prospect which must be combated by a "determined political will to prevent it from becoming a reality".³³

From this viewpoint, it is not the actual investigation by qualified experts which becomes the focus of the system, but rather the preliminary investigation carried out by the Secretary-General with the advice of consultant experts.

By appealing to the Secretary-General, the States which have been attacked and (perhaps even more so) third States demonstrate the existence of an *opinion juris*. In response to the alleged facts, the Secretary-General records an allegation, a protest that positive law is being ignored in the use of chemical and bacteriological weapons. Intervention by States not involved in the conflict is by no means ruled out: they too join in the concern that an obligation is being violated; the same is true of the provision of names of experts, laboratories or equipment, since there is no point in accepting preparatory operations to observe a non-existent rule. The Secretary-General's *prima facie* assessment that gas has indeed been used fulfils a similar function. Once the dispatch of experts no longer provokes protest - as a groundless action totally lacking in legal justification - this again consolidates practical indications of consent.

The investigation can then be seen not as a means of verifying observance of an undertaking entered into, but as a technique for strengthening the norm. It could not be otherwise unless sanctions were guaranteed in the event of a violation. The unrealistic nature of such a prospect in the United Nations framework helps to strengthen the hypothesis which favours a juridical policy of strengthening norms.

³³ See, for example, *United Nations Chronicle*, September 1988, Vol. XXV, No. 3.

Annexes

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Table 1: Procedures related to the Geneva Protocol of 1925
Main Treaty Provisions and Monitoring and Verification Methods

	Factfinding							Assessment procedures					
	0	1	2	3	4	5	6	7	8	9	10	11	12
Establishment of data base													
Limitation of use													
Limitation of deployment													
Limitation of testing													
Limitation of possession													
Limitation of production													
Limitation of transfer													
<i>Prohibition of use</i>													
Prohibition of deployment													
Prohibition of testing													
Prohibition of possession													
Prohibition of production													
Prohibition of transfer													
Destruction													

0 = No method; 1 = National Technical Means; 2 = Exchange of data; 3 = Consultation; 4 = Control Posts/Observation; 5 = On-site inspection on a State territory; 6 = On-site inspection on a non-State territory; 7 = IAEA Safeguards; 8 = Review Conference; 9 = Submission of report; 10 = Consultation; 11 = Referral to an international organization; 12 = Referral to the International Court of Justice.

For further explanation see also pages 60 and 32-34.

Explanatory note on Table 1

The Geneva Protocol prohibits the use of Chemical and Biological Weapons in war. The Protocol does not contain any provisions to verify compliance with the use prohibition.

Factfinding methods

Against the background of alleged use of chemical/biological weapons in South-East Asia and Afghanistan the UN General Assembly adopted resolution 35/144 C on 12 December 1980 by virtue of which an investigation was undertaken by an independent group of experts.

(See also Alres/36/96 C and the report of the group A/37/259 of 1 December 1982 and A/39/488 of 2 October 1984).

In order to permit a more direct recourse to the method of investigation France introduced resolution 37/98 D in 1982, followed by resolution 42/37 C in 1987 by which the UN General Assembly requested the UN Secretary General to investigate, with the assistance of qualified experts information that may constitute a violation of the Protocol.

(See in particular Alres/37/98 D para 4 (1982) and Alres 42/37 C paras 4 and 7 (1987). Alres/42/37 C was adopted without a vote i.e. by consensus).

It should be noted that the various investigations conducted with respect to Iraq's alleged use of chemical weapons were carried out not in connection with resolution 37/98 D, but within the context of the Security Council.

(See: S/16433, 26 March 1984; S/17127, 24 April 1985; S/17911, 12 March 1986; S/18852, 8 May 1987; S/19823, 25 April 1988. The Security Council has not adopted any specific resolution on the use of chemical weapons. Only the declarations of its President made on behalf of the Council condemned the use of such weapons and reaffirmed the need for compliance with the 1925 Geneva Protocol (see S/16454, 30 March 1984; S/17130, 29 April 1985; S/17932, 21 March 1986). Iraq was until 1986 not mentioned as a chemical weapons user. Security Council resolution S/598 of 20 July 1987 called for an immediate cease-fire and was adopted on the basis of Chapter VI (Articles 39 and 40) of the Charter. The preamble of this resolution deplores the use of chemical weapons).

Assessment procedures

Resolution 42/37 C requests the Secretary-General to submit a report to the General Assembly.

The Relevant Treaty Articles

PROTOCOL FOR THE PROHIBITION OF THE USE IN WAR OF ASPHYXIATING, POISONOUS OR OTHER GASES, AND OF BACTERIOLOGICAL METHODS OF WARFARE (17 JUNE 1925, GENEVA)

The Undersigned Plenipotentiaries, in the name of their respective Governments:

Whereas the use in war of asphyxiating, poisonous or other gases, and of all analogous liquids, materials or devices, has been justly condemned by the general opinion of the civilized world; and

Whereas the prohibition of such use has been declared in Treaties to which the majority of Powers of the world are Parties; and

To the end that this prohibition shall be universally accepted as part of International Law, binding alike the conscience and the practice of nations;

Declare:

That the High Contracting Parties, so far as they are not already Parties to Treaties prohibiting such use, accept this prohibition, agree to extend this prohibition to the use of bacteriological methods of warfare and agree to be bound as between themselves according to the terms of this declaration.

(...)

No specific articles concerning verification

RESOLUTION 37/98 D OF 13 DECEMBER 1982 (GENERAL ASSEMBLY OF THE UNITED NATIONS)

Provisional procedures to uphold the authority of the 1925 Geneva Protocol

The General Assembly,

Recalling the provisions of the Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, which was signed at Geneva on 17 June 1925 and entered into force on 8 February 1928,

Noting that States Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction have reaffirmed their adherence to the principles and objectives of that Protocol and called upon all States to comply with them,

Noting also that the Protocol does not provide for the establishment of procedures for investigating reports concerning activities prohibited by the Protocol,

Noting further that the Committee on Disarmament is currently engaged in the negotiation of a convention on the prohibition of chemical weapons, which should contain provisions to ensure its effective verification,

Believing it conducive to the continued authority of the Protocol that, pending eventual formal arrangements, procedures be established to make possible the prompt and impartial investigation of information concerning possible violations of the provisions of the Protocol,

(1) Calls upon all States that have not yet done so to accede to the 1925 Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare;

(2) Calls upon all States to comply with the provisions of the Protocol;

(3) Calls upon the Committee on Disarmament to expedite its negotiations on a convention on the prohibition of chemical weapons with a view to its submission to the General Assembly with the shortest possible delay;

(4) Requests the Secretary-General to investigate, with the assistance of qualified experts, information that may be brought to his attention by any member State concerning activities that may constitute a violation of the Protocol or of the relevant rules of customary international law in order to ascertain thereby the facts of the matter, and promptly to report the results of any such investigation to all Member States and to the General Assembly;

(5) Requests the Secretary-General, with the co-operation of Member States, to compile, as a matter of priority, and maintain lists of qualified experts whose services could be made available at short notice to undertake such investigations, and of laboratories with the capability to undertake testing for the presence of agents the use of which is prohibited;

(6) Requests the Secretary-General, in meeting the objectives of paragraph 4 above:

(a) To appoint, as necessary, groups of experts selected from the above-mentioned list to undertake urgent investigation of possible violations;

(b) To make the necessary arrangements for the experts to collect and examine evidence, including on-site, with the co-operation of the countries concerned, to the extent relevant to the investigation, and for such testing as may be required;

(c) To seek, in any such investigation concerned, appropriate assistance and relevant information from all Governments and international organizations as well as other appropriate sources;

(7) Further requests the Secretary-General, with the assistance of qualified consultant experts, to devise procedures for the timely and efficient investigation of information concerning activities that may constitute a violation of the Geneva Protocol or the relevant rules of customary international law and to assemble and organize systematically documentation relating to the identification of signs and symptoms associated with the use of such agents as a means of facilitating such investigations and medical treatment that may be required;

(8) Requests Governments, national and international organizations, as well as scientific and research institutions, to co-operate fully with the Secretary-General in this work;

(9) Requests the Secretary-General to submit a report to the General Assembly at its thirty-eighth session on the implementation of the present resolution.

Resolution 42/37 C of 30 November 1987
(General assembly of the United Nations)

Measures to uphold the authority of the 1925 Geneva Protocol and to support the conclusion of a chemical weapons convention

The General Assembly,

Recalling the provisions of the Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, signed at Geneva on 17 June 1925, and other relevant rules of customary international law,

Recalling also the necessity of the adherence by all States to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, signed in London, Moscow and Washington on 10 April 1972,

Reiterating its concern over reports that chemical weapons have been used and over indications of their emergence in an increasing number of national arsenals, as well as over the growing risk that they may be used again,

Noting with satisfaction that the Conference on Disarmament is actively engaged in negotiating a convention on the prohibition of the development, production, stockpiling and use of all chemical weapons and on their destruction, including detailed provisions for the on-site verification of compliance with the convention, and expressing its support for the early and successful conclusion of those negotiations,

Noting also that prompt and impartial investigation of reports of possible use of chemical and bacteriological weapons would further enhance the authority of the 1925 Geneva Protocol,

Expressing its appreciation for the work of the Secretary-General, and noting the procedures available to him in support of the principles and objectives of the 1925 Geneva Protocol,

(1) Renews its call to all States to observe strictly the principles and objectives of the 1925 Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, and condemns all actions that violate this obligation;

(2) Urges all States to be guided in their national policies by the need to curb the spread of chemical weapons;

(3) Recognizes the need, upon the entry into force of a chemical weapons convention, to review the modalities available to the Secretary-General for the investigation of reports of the possible use of chemical weapons;

(4) Requests the Secretary-General to carry out investigations in response to reports that may be brought to his attention by any Member State concerning the possible use of chemical and bacteriological (biological) or toxin weapons that may constitute a violation of the 1925 Geneva Protocol or other relevant rules of customary international law in order to ascertain the facts of the matter, and to report promptly the results of any such investigations to all Member States;

(5) Requests the Secretary-General, with the assistance of qualified experts provided by interested Member States, to develop further technical guidelines and procedures available to him for the

timely and efficient investigation of such reports of the possible use of chemical and bacteriological (biological) or toxin weapons;

(6) Also requests the Secretary-General, in meeting the objectives set forth in paragraph 4 above, to compile and maintain lists of qualified experts provided by Member States whose services could be made available at short notice to undertake such investigations, and of laboratories with the capability to undertake testing for the presence of agents the use of which is prohibited;

(7) Further requests the Secretary-General, in meeting the objectives of paragraph 4 above:

(a) To appoint experts to undertake investigation of the reported activities;

(b) Where appropriate, to make the necessary arrangements for experts to collect and examine evidence and to undertake such testing as may be required;

(c) To seek, in any such investigation, assistance as appropriate from Member States and the relevant international organizations;

(8) Requests Member States and the relevant international organizations to co-operate fully with the Secretary-General in the above-mentioned work;

(9) Requests the Secretary-General to submit a report to the General Assembly at its forty-third session on the implementation of the present resolution.

List of Parties

Protocol for the Prohibition of the Use
in War of Asphyxiating, Poisonous or other Gases,
and of Bacteriological Methods of Warfare
(as of 31 July 1990)

Afghanistan	1986	Germany, Federal Republic of ¹	1929
Albania	1989	Ghana	1967
Antigua and Barbuda	1989	Greece	1931
Argentina	1969	Grenada	1989
Australia	1930	Guatemala	1983
Austria	1928	Guinea-Bissau	1989
Bahrain	1988	Holy See	1966
Bangladesh	1989	Hungary	1952
Barbados	1976	Iceland	1967
Belgium	1928	India	1930
Benin	1986	Indonesia	1971
Bhutan	1979	Iran, Islamic Republic of	1929
Bolivia	1985	Iraq	1931
Brazil	1970	Ireland	1930
Bulgaria	1934	Israel	1969
Burkina Faso	1971	Italy	1928
Cambodia	1983	Ivory Coast	1970
Cameroon	1989	Jamaica	1970
Canada	1930	Japan	1970
Central African Republic	1970	Jordan	1977
Chile	1935	Kenya	1970
China	1929	Korea, Democratic People's	
Cuba	1966	Republic of	1988
Cyprus	1966	Korea, Republic of	1988
Czech and Slovak Federal Republic	1938	Kuwait	1971
Denmark	1930	Lao People's Democratic Republic	1989
Dominican Republic	1970	Lebanon	1969
Ecuador	1970	Lesotho	1972
Egypt	1928	Liberia	1927
El Salvador	S	Libyan Arab Jamahiriya	1971
Equatorial Guinea	1989	Luxembourg	1936
Ethiopia	1935	Madagascar	1967
Fiji	1973	Malawi	1970
Finland	1929	Malaysia	1970
France	1926	Maldives	1966
Gambia	1966	Malta	1970
German Democratic Republic ¹	1959	Mauritius	1971
			...

Mexico	1932	Solomon Islands	1981
Monaco	1967	South Africa	1930
Mongolia	1968	Spain	1929
Morocco	1970	Sri Lanka	1954
Nepal	1969	Sudan	1980
Netherlands	1930	Sweden	1930
New Zealand	1930	Switzerland	1932
Nicaragua	S	Syrian Arab Republic	1968
Niger	1967	Taiwan	1929
Nigeria	1968	Tanzania, Republic of	1963
Norway	1932	Thailand	1931
Pakistan	1960	Togo	1971
Panama	1970	Tonga	1971
Papua New Guinea	1980	Trinidad and Tobago	1962
Paraguay	1933	Tunisia	1967
Peru	1985	Turkey	1929
Philippines	1973	Uganda	1965
Poland	1929	Union of Soviet Socialist Republics	1928
Portugal	1930	United Kingdom	1930
Qatar	1976	United States of America	1975
Romania	1929	Uruguay	1977
Rwanda	1964	Venezuela	1928
Saint Kitts & Nevis	1989	Viet Nam	1980
Saint Lucia	1988	Yemen Arab Republic ²	1971
Saudi Arabia	1971	Yemen, Democratic Republic of ²	1986
Senegal	1977	Yugoslavia	1929
Sierra Leone	1967		

S means that the Treaty was signed, but no further action has been taken.

¹ In 1990 the two States merged forming Germany.

² In 1990 the two States merged forming the Republic of Yemen.

Chapter 2

The Antarctic Treaty (1959)

Gilles Cottureau

Antarctica interests people. This continent, larger than Europe and long ignored because of its remoteness, is today the centre of a polemic concerning its exploitation. It remains an exemplar of international co-operation: beginning with the International Geophysical Year, that co-operation is continuing within the framework of the Antarctic Treaty of 1 December 1959, which came into force on 23 June 1961.

The scientific co-operation between States in Antarctica is also exemplary in another respect. The Antarctic Treaty contains express provisions to verify whether conduct is in accordance with the rules subscribed to. Seen in this light, it can serve as a model for disarmament agreements.¹

The event is worth noting because it is rare. It is not that what is involved is a discovery - "Governments show themselves very aware of the link between the effectiveness of a rule and the operation of machinery for monitoring its application . . . that takes the place of individual interpretation by States"² Generally negotiators differ from one another on the degree of precision they agree to specify for monitoring. Because each of them is well aware of the link between the effectiveness of a rule and the closeness of verification, a conflict of interests leads more often than not to the reduction or elimination of the verification clauses.

In international relations, it is not always possible or expedient to evade the negotiation of a treaty text. But all those who negotiate under constraint hope firmly at least to limit the provisions pertaining to verification: to include them in a separate document, to confine them to clauses concerning which reservations are possible, or to wrap them up in evasive language.

In the case of the Antarctic Treaty, there was not the usual evasiveness on the part of States towards the relevant provisions for which reservations may be entered. An historic event, the Treaty may be considered a milestone in relations between States.³ It marks the abandonment of the frequent practice of compromising on verification as a substitute for compromising on substance; generally, the geographical scope of a treaty is inversely proportional to the verified constraints accepted in the instrument. There are perhaps two reasons for what happened in the case of the Antarctic Treaty:

¹ Fred Tanner, "The Antarctic Verification System: A Model for the Future", in L. Caflisch and F. Tanner, *The Polar Regions and Their Strategic Significance*, Programme for Strategic and International Security Studies, No. 2, Geneva, 1989.

² Guy de Lacharrière "Suggestions pour négocier mieux un droit international plus efficace", *Etudes en l'honneur du juge Manfred Lachs*, La Haye, Martinus Nijhoff, 1984, p. 159.

³ Serge Sur, who divides the history of verification provisions into three successive stages, sees the second of those stages as having begun in 1961 with the Zorin declaration, but considers that the Antarctic Treaty might also be taken as the starting point. See S. Sur, *A Legal Approach to Verification in Disarmament or Arms Limitation*, UNIDIR, Research Paper, No. 1, September 1988.

the inherently unusual territory to which the Treaty applies is both clearly identified and far from the epicentres of international political disputes; and the group of States concerned was, at least at the outset and to some degree still is, quite small.

Unlike its Northern counterpart, the South Pole is a continent. Its shoreline varies from winter to summer; the maximum limit of the ice, the line of the Antarctic Convergence, extends far beyond the parallel that serves to delimit the zone of application of the Treaty. The abstract line of 60° south latitude has taken precedence over the geographical phenomenon. The Atlantic Convergence is the zone where the cold polar water passes below southwards-moving warmer water; the point of occurrence of this natural phenomenon varies between 47° and 63° south latitude.⁴

The States with territorial claims agreed to freeze them. Thus, to the unity of the legal regime was joined an identity of status, despite the differences in the positions of the States present in the area as to the nature of their rights over the site. With no State losing what it already had or being overtaken in its claims by another, thanks to the provisions of Article IV of the Treaty, there was no longer any need to reject the articles on verification. Antarctica, a remote continent with its geopolitics "immobilized" between the Parties, could become a model of harmony.

Perhaps there were less positive factors to weigh in the balance. The remoteness of the area may have led the negotiators to think that precise legal content and meticulous control would never be truly tested in the face of the frightful polar weather conditions. The "ice-world tours" that are now becoming more numerous were not common at the time.

The Treaty also provides for the freezing of claims to sovereignty, i.e. for a "conventional aristocracy".⁵ The 12 original signatory States accepted the idea of accession by other States, but the heart of the system, the consultative meetings of the Parties, is not readily open to them. To participate in those meetings, States other than the original signatories must demonstrate sufficient interest in Antarctic research; determining the adequacy of this interest is left to the States which are already entitled to participate. Furthermore, the right of participation in the meetings lasts only as long as the interest in research: there is no "ratchet effect"; a guest may become unwelcome.

The freezing of sovereignty, the internationalization of research and the opening of stations to inspection by the other Parties are supplemented by a novel means of verification: inspection by observers. The observers' role is close to the definition proposed by Georges Fischer and Daniel Vignes:

The ideal type of inspection might be defined as follows: in-depth, active on-site examination, by the most varied possible means, practised within the framework of an uninterrupted, durable process and pursuant to precise treaty rules and not subject for its

⁴ See M. W. Mouton, "The International Regime of the Polar Regions", *RCADI*, 1962, III, 107, which provides maps. See also P. Bretton, "L'Union Soviétique et la clause de non-militarisation du Spitzberg", *AFDI*.

⁵ R. J. Dupuy, "Le Traité sur l'Antarctique", *AFDI*, 1960, p. 118.

initiation to the breaching or suspicion of breaching of an undertaking or an international rule or to a complaint by a State or a decision by an international organ. The inspection would have as its purpose the determination of the conformity of a situation, operations or conduct to international rules. It would be carried out by a special category of international civil servants enjoying the fullest possible freedom of access and movement and appropriate privileges and immunities and charged with recording their findings in reports to be submitted to an international organ that would alone be competent to draw conclusions from them and to take action accordingly.⁶

But inspection is not the only factfinding procedure that gives substance to verification in the Antarctic Treaty. Communications, spontaneous and organized, provide information to justify or support scrupulous observation.

Establishment of the facts, or of sequences of facts, is not sufficient to meet the requirements of a real obligation of verification. It is necessary to go beyond the minimalist concept that limits verification to an inquiry or report and to make an assessment of the conduct described in the rule. The definition quoted above implies strongly that a report alone is not sufficient. The report must be accompanied by an evaluation: "Far from being a consequence of verification, legal assessment is its cornerstone, since the purpose of verification is invariably to determine whether an obligation is being respected or not. Compliance or non-compliance with a rule is always verified".⁷

The rule in question is, of course, the Treaty, but to this should be added the recommendations under Article IX. Pursuant to that Article, the Contracting Parties meet to recommend to their Governments measures in furtherance of "the principles and objectives"⁸ of the Treaty. Those measures become effective "when approved by all the Contracting Parties whose representatives were entitled to participate in the meetings held to consider those measures".⁹

The texts in question are not real amendments to the Treaty, but must, as stipulated in the relevant Recommendation,¹⁰ be approved "in accordance with the legal and constitutional procedures". They form "a part of the overall structure of co-operation established by the Treaty"¹¹ and every State meaning to become a participant in the consultative meetings must declare its intention to apply them and to be bound by them. "In the execution of the principles and objectives of the Treaty, there would be uniformity of practice in the activity of all the Parties active in the Antarctic, and the recommendations approved must be understood in the light of the

⁶ G. Fischer and D. Vignes, *L'inspection internationale, quinze études de la pratique des Etats et des organisations internationales*, Bruxelles, Bruylant, 1976, p. 13.

⁷ S. Sur, *loc. cit.*, p. 19.

⁸ Antarctic Treaty, article IX.

⁹ *Ibid.*

¹⁰ Recommendation II-IX.

¹¹ Recommendation III, 7.

obligations assumed by Contracting Parties under the terms of the Treaty, particularly Article X".¹²

Because the Antarctic Treaty is a model for other international legal instruments, the contribution that it makes to the procedures for verifying international undertakings must be studied from two points of view: factfinding and juridical evaluation of the facts.¹³

I - Collecting the Facts

Collecting the facts - gathering information on States' conduct from which to determine how far their actions correspond to their undertakings - is effected both through confidence-building measures (the regular submission of information to some or all of the Parties to the Treaty) and through more intrusive measures of observation.

All the above measures provide, or are aimed at providing, negative proof: there is no recorded conduct contrary to the Treaty. In rarer cases, they will enable an assessment to be made of the intensity of an activity. They do not, however, furnish absolute proof that no breach of the Treaty has occurred at any point within the area to which it applies.

THE COMMUNICATION BY THE STATE OF INFORMATION ON ITS ACTIVITIES

There are several points in the Treaty at which provision is made for the communication of information: Article III, Article VII, paragraph 5, and, with respect to certain States, Article IX.

The communication referred to in Article III has as its objective the strengthening of scientific co-operation.

In this Article, the Contracting Parties agree that, to the greatest extent feasible and practicable:

1. Information regarding plans for scientific programmes in Antarctica shall be exchanged to permit maximum economy and efficiency of operations;
2. Scientific personnel shall be exchanged in Antarctica between expeditions and stations;
3. Scientific observations and results from Antarctica shall be exchanged and made freely available.

Such communication, the principal objective of which is the continuation of the scientific co-operation instituted during the International Geophysical Year, can clearly contribute towards the verification of compliance with the Treaty's rules through the

¹² Extract from the report of the 4th Consultative Meeting, "Explanatory statement concerning recommendation III. 7".

¹³ See article XXIV of the Convention on the Conservation of Antarctic Marine Living Resources, which provides for a system of observation and inspection "taking account of the existing international practice"; see also D. Vignes, "The Convention on the Conservation of Antarctic Marine Living Resources", *AFDI*, 1980, pp. 731 *et seq.*

circulation of ideas and information that it entails. What was intended at first was the free exchange of information between scientists whose major concern was not checking compliance with a legal obligation. However, the States Parties to the Treaty agreed to submit at frequent specified intervals certain standard types of information that, in addition to spontaneous information, would facilitate verification.

Article VII, paragraph 5, provides for the notification by a State at the time when the Treaty enters into force for it, and thereafter as a matter of course, of:

1. All expeditions to and within Antarctica, on the part of its ships or nationals, and all expeditions to Antarctica organized in or proceeding from its territory;
2. All stations in Antarctica occupied by its nationals; and
3. Any military personnel or equipment intended to be introduced by it into Antarctica subject to the conditions prescribed in paragraph 2 of Article I of the present Treaty.

Article IX provides for meetings of the Contracting Parties and for exchanges of information at those regular gatherings, which are open to the original signatories and to the Parties by accession that demonstrate their interest in Antarctica by conducting substantial activity there.

States' practice with regard to these three provisions has been addressed in various recommendations.

The distinction sometimes made between the obligations under Article III and those under Article VII, paragraph 5, has become blurred with the multiplication and standardization of exchanges of information.

At the seventh consultative meeting (Wellington, 30 October-10 November 1972), States felt it essential to combine and subject to a common format the information gained by exchanges between scientific organizations and the information exchanged through diplomatic channels. The next such meeting (Oslo, 9-20 June 1975) adopted Recommendation VIII.6, annexed to which is a standardized table of the information to be supplied.

The standard 16-point questionnaire seeks information both on the equipment and on the persons present in the Treaty zone. Respondents must supply the names, types, numbers and descriptions of the ships, aircraft or other vehicles introduced or to be introduced into the Treaty zone and give information on any military equipment they carry.

For instance, in its document describing "the programme of French activities in Terre Adélie for the 1988-89 Antarctic summer and 1989" and as "information provided pursuant to Articles III and VII (5) of the Antarctic Treaty", the Government of France declares, through the report of the Senior Administrator of the Territory of the French Southern and Antarctic Lands, that it is using the *Astrolabe*, a cargo vessel built in 1986, belonging to the Fish Shipping Company of Kerguelen, having a hull strengthened for navigation in ice and containing no military equipment.

Next, States must provide the dates, duration and itinerary of expeditions. They therefore indicate the frequency of trips by the vessels they use for inspections.

The third set of information to be provided comprises the names, locations and opening dates of bases and related stations. It must also be indicated whether stations are summer or winter establishments.

Under the fourth point, States must show the composition of base staff, distinguishing between the officers responsible for the bases themselves and those responsible for ships or aircraft. Military officers must be shown in a special list, with a precise indication of their rank; for scientists, mention must be made of the institution to which they are attached.

The fifth question requires information on the type and number of weapons in the staff's possession. The quantities involved may be very small.

Next comes the question of the work programme. States must describe the activities, including the scientific research, undertaken or planned at each of their bases and stations and on board their ships or aircraft. They must also indicate the corresponding area or areas of application.

The next question calls for a list of scientific equipment, with a mention of the base at which it is usually employed.

The eighth question seeks information on means of transport and communications equipment. A special declaration is required for landing strips and the related navigational aids and air traffic control equipment.

The ninth point relates to emergency facilities, including medical services and usable shelters.

The next question requires Parties to list the expeditions which, while not organized by themselves, are organized or stop within their territory or set out from it.

The eleventh question requires States to supply the names, positions, descriptions and dates of establishment of, and the dates of the last visit to, unoccupied shelters, and to indicate what can be found there.

As the twelfth item in their reports, States must provide annual accounts of all the animals killed or captured.

Annual declarations must also be made of the use of radioisotopes, but such use should preferably be declared six months in advance.

The fourteenth question, which relates to the use of sounding rockets, requires States to indicate the dates and places of launches or, failing that, the period and direction of launching, the maximum altitude, the intended impact zone, the types and purposes of the rockets and the research programmes concerned.

The fifteenth point calls for information on the ships participating in substantial research programmes in the Treaty zone that have already been mentioned in a special recommendation, together with the information appearing in points 1, 2, 4, 6 and 7 of the standard.

The final, sixteenth point requires the submission, before 30 November, of a report on tourist activities and non-governmental expeditions. This information, added to recommendation VIII.6 by recommendation XIII.3, refers to texts that enable a check to be kept on the activities of tourists and of expeditions that do not have governmental support.

The States Parties provide all the above information.¹⁴ Thanks to standardization, diachronic and synchronic analyses can be made for individual States and, when comparisons are desired, for several States at once.

Hence, the responses can contribute towards the improvement of verification. An appreciable difference between the resources employed by a State from one year to the next that was not explained by information on scientific activity could prompt the other States to take more intrusive verification measures. The same could apply if it were found that two or more States were simultaneously employing, for identical or comparable activities, similar levels of resources. The process is thus one of administrative control that, on "evidence of disparity", will trigger in-depth verification. The responses regularly given by States under Articles III and VII, paragraph 5, can therefore instigate a visit by "observers" within the meaning of Article VII of the Treaty.

In addition to this regular information from States there is the information provided by certain States in occasional communications.¹⁵

In addition to Articles III and VII, Article IX sometimes triggers the communication of information for assessment by the other States Parties. That is the case when a Party by accession considers itself sufficiently active in Antarctica to be able to join the group of consultative Parties. It was unanimously decided at the first meeting of those Parties that any State considering itself entitled to join the group would have to provide information on its activities in Antarctica, particularly the content and objectives of its scientific programme.

The States which have become "consultative Parties" in this way have thus all had to prove their interest. All the records of such accessions refer to the existence of information of this kind. In the case of Poland, the final report of the first meeting mentions that the participants checked (in accordance with Article X of the Treaty and on the basis of information provided on scientific research being undertaken at the station) that Poland's activities were consistent with the principles and purposes of the Treaty.¹⁶ For the Federal Republic of Germany, the list of information was far fuller, but the wording was the same.¹⁷ That wording was repeated, with a minor variation, for Brazil and India, whose cases were examined at the next meeting,¹⁸ and then for

¹⁴ Most of it is covered by recommendation VIII.6, but there are earlier recommendations of which some parts, concerning points of detail, have not been carried over. Those points remain in force on the basis of the relevant recommendations (III.11, VI.2 and VI.12).

¹⁵ This information corresponds to recommendations I.1, I.3, I.7, I.13 and II.1 and covers scientific information, scientific data, logistical problems, nuclear equipment and related technology.

¹⁶ "Having ascertained in accordance with article X of the Treaty, on the basis of information provided on scientific investigations being undertaken at the station . . . that the activities of the Polish People's Republic in the Antarctic are in accordance with the principles and purposes of the Treaty . . ."

¹⁷ Third special consultative meeting, Buenos Aires, 3 March 1981.

¹⁸ Fifth special consultative meeting, Canberra, 12 September 1983.

the People's Republic of China and Uruguay,¹⁹ the German Democratic Republic and Italy,²⁰ and, finally, for Spain and Sweden.²¹

With minor variations,²² the wording of the documents recording the entry of a new consultative Party to the group of States engaging in substantial research is always the same.

The information that States collect and submit on their own activities is therefore important. It is a confidence-building factor whose veracity can be verified, thereby increasing its impact. The honesty of a State's reports, or at least the accuracy of its declarations concerning its own activities, can be verified by inspection.

THE SEARCH BY ONE STATE FOR INFORMATION ON THE ACTIVITIES OF THE OTHERS

In order to promote its objectives and ensure the observance of its provisions, the Antarctic Treaty established an inspection system, described in the first four paragraphs of Article VII, which owes its origin to proposals by the United States of America.²³

The persons selected to carry out inspections are termed observers. Not all Parties to the Treaty are competent to appoint observers. Such competence is reserved to Parties entitled to participate in the meetings provided for in Article IX. Observers so appointed have freedom of movement in all areas of Antarctica for the purposes of performing their duties. They enjoy a number of rights enabling them to carry out their missions.

Observers are individually-appointed persons whose names must be communicated to the other States. It is agreed that they will have a document in their possession identifying them and enabling their nationality to be checked, since they must be nationals of the Party that appoints them. Notification must also be given of the termination of observers' appointments.

For example, the United States of America announced in November 1988 that inspections would be carried out by 10 persons whom it named and affirmed to be United States nationals. The note, circulated to those States entitled to participate in the meetings of consultative Parties under Article IX, expressly terminated the previous appointments. It stated that each United States observer would introduce himself by presenting an identity card bearing his photograph. About the same time, the United Kingdom appointed three observers, stating that their means of identification would be a letter for presentation to the appropriate individual. The USSR appointed eight

¹⁹ Sixth special consultative meeting, Brussels, 7 October 1985.

²⁰ Seventh special consultative meeting, Rio de Janeiro, 5 October 1987.

²¹ Eighth special consultative meeting, Paris, 20-21 September 1988.

²² The expression "being undertaken" has been replaced by "carried out".

²³ According to statements made by Mr. Herman Phleger to the United States Senate, *Hearings, United States Senate*, 14 June 1960.

observers, giving their names and functions in its note, but not announcing any identification procedure,²⁴ although this is generally explicitly mentioned.

Some of these observers are members of the armed forces and others of scientific research agencies specializing in polar questions or in a field of particular relevance to Antarctica.²⁵

It will be seen, therefore, that there are no arrangements for the approval of observers. Each group of observers, each inspector, wherever it or he may be, remains solely under the control of the appointing State. Article VIII of the Antarctic Treaty provides that observers, and the persons accompanying them, shall be subject only "to the jurisdiction of the Contracting Party of which they are nationals in respect of all acts or omissions occurring while they are in Antarctica for the purpose of exercising their functions".

Unlike international civil servants or agents, observers do not have any real privileges or immunities, but they do enjoy a functional immunity that enables them to escape the application of the law of other States, including those that consider themselves to be - or that are - holders of areas of national territory. Consequently, the system that exists is not integrated; it is a system of inter-State control²⁶ which the Treaty declares, in Article VIII, to be "without prejudice to the respective provisions of the Contracting Parties relating to jurisdiction over all other persons in Antarctica".

Observation may be conducted in different ways, depending on whether the inspection missions are individual or joint, sudden or planned.

The Treaty leaves States free: they may dispatch purely national missions or pool their forces. The United States was, at first, hesitant about pooling.²⁷ The United Kingdom, on the other hand, was in favour; in its note of November 1988, the Foreign Office informed the other States that during the 1988-89 season its observers would act with the observers appointed by the Government of New Zealand. France carried out its operations in conjunction with the Federal Republic of Germany during the 1989-90 season. By cutting costs in this way, States can, if they wish, make more frequent inspections.²⁸

²⁴ Information drawn from the notes sent by the Governments in question to the heads of the diplomatic missions of the countries referred to in Article IX (in this case, the notes transmitted to the Government of France).

²⁵ It should be noted that the term "observer" is not restricted to "inspectors". Scientists use it to note foreigners seconded to a polar mission. The term is also applied to the representatives of the Scientific Committee on Antarctic Research and of the Commission for the Conservation of Antarctic Marine Living Resources who are invited to participate in the meetings of consultative Parties under Article IX.

²⁶ See R. J. Dupuy, "Le Traité sur l'Antarctique", *AFDI*, 1960, p. 129.

²⁷ M. Voelckel, *op. cit.*, p. 227.

²⁸ The inspection made by France and the Federal Republic of Germany was a first for these States, which had previously been deterred by the very high cost of inspection campaigns. The French budget for the Austral and Antarctic territories for 1990 amounted to 183 million French francs, of which 45 million were reserved for research.

States' attitudes to planning differ. Some announce their observers' arrival only at the last minute, while others draw up and communicate in advance the list of sites to be visited. In its note of October 1988, the USSR Government announced that it intended to visit in October and November of that year 16 stations, which it named.²⁹ It goes without saying that a list of this kind is not binding and does not renounce a country's overall right to have its observers go to any region of Antarctica at any time. An announcement by India said that its country's inspectors would undertake a tour in January and February 1989, but did not name any sites.

Basically, an inspection is made by travelling. While travel by observers is permitted throughout the Treaty zone, on-the-spot verification is not possible at absolutely every point within the area delimited by the line of 60° south latitude.

Thus, while observers can indeed go to any area of Antarctica to inspect any station, installation or equipment that may be there, the access of ships and aircraft is restricted to points of discharge or embarkation of cargoes or personnel. Problems could arise with regard to unverifiable suppositions concerning activities on vessels under way. Furthermore, Article VI contains a clear reminder of the freedom of the high seas in the area South of the 60th parallel. Disputes concerning the discrete movement of missile submarines could arise out of the conflict between the non-militarization and non-nuclearization of Antarctica and the authorization given in the Sea-Bed Treaty of 11 February 1971.³⁰

Inspection may also take the form of the aerial surveillance expressly provided for in Article VII of the Treaty but reserved to those States having the right to designate observers. This possibility is a valuable supplement to the performance of checks at fixed points such as bases and associated establishments and trans-shipment points. Bearing in mind the aim of inspection, it is reasonable to assume that the wording in question encompasses the use of satellites.³¹ In any case, the checks in question, unlike those conducted on the ground, will be anonymous. The name of the observer is obviously irrelevant for information gathered by an orbiting device, but this is not altogether the case for observations made from an aircraft. The persons on board the aircraft are themselves charged with a mission; they must therefore be included in the list of names notified to the States (referred to in Article IX). Or can they be considered as persons accompanying observers and subject, like the observers, only to the jurisdiction of the national State?

²⁹ Artigas (Uruguay); Arctowski (Poland); Great Wall of China (People's Republic of China); Commandante Ferraz (Brazil); Jubany (Argentina); Georg von Neumayer (Federal Republic of Germany); Dakshin Gantori (India); Halley (United Kingdom); Davis and Mawson (Australia); Showa (Japan); McMurdo and Amundsen-Scott (United States of America); Scott Base (New Zealand); Georg Forster (German Democratic Republic).

³⁰ M. F. Labouz, "Les aspects stratégiques de la question de l'Antarctique", *RGDIP* 19, pp. 588-589 and the references quoted in the notes.

³¹ "The term 'aerial observation' employed in the Treaty seems sufficiently comprehensive to include both inspection by aircraft and inspection by satellites", M. Voelckel, "L'inspection en Antarctique", *L'Inspection Internationale*, op. cit., p. 235.

Inspection, the prerogative of the consultative Parties, has in one case been expressly employed by them to verify the interest of a State which, having become a Party by accession, wished to join their number. In discussing Poland's application, the consultative States, meeting at London on 25, 27 and 29 July 1977, laid down the general lines to be followed: verification can lead to appropriate investigations, "including the exercising of their right of inspection in accordance with Article VII of the Treaty".³² In this specific case, the only one so far, access to the status of consultative Party was preceded by an inspection "under Article VII of the Treaty", whereas for other States the text refers solely to scientific expeditions and investigations.³³

Observers have no model outline on which to standardize their inspections, but States are increasingly aware that the need for one is paramount: the United States should use multi-topic checklists in order to draw up standardized reports.³⁴

The reports contain two categories of information. First, there are factual findings; for instance, that the staff numbers eight people, that they have a hunting rifle and an alarm rifle, etc. There are also assessments which, beneath the apparent simplicity of their wording, are the fruit of far more complex operations. For example, concerning equipment one report states: "The list of the equipment present at the base was communicated within the framework of the Antarctic Treaty (Exchange of Information). Although time did not allow us to make a detailed comparison, no obvious distortion was apparent".³⁵ This report includes reference to the Treaty, to the recommendations and to the documents provided in application of another article or passage in Article VII than that concerning observation.

The conclusion of the Australian report introduces an opinion: "The inspection team was given free access to all the installations and all the staff of Dumont d'Urville and was able to discuss all subjects freely and fully. The team found that the base was consistent with the recommendations of the Antarctic Treaty. In addition, the scientific supervisors are fully aware of the concern caused by the runway project and are developing schemes for diminishing its effects on bird-life so as to reduce its overall impact".

In view of the growing importance of Antarctica, of the essential role of inspection in maintaining the credibility of the system and of the special responsibilities that the Treaty recognizes have been granted to the consultative Parties, the thirteenth

³² Extract from the Final Report of the First Special Antarctic Treaty Consultative Meeting, *Handbook of the Antarctic Treaty System*, Part I, General Measures, Cambridge, Scott Polar Research Institute, 6th Edition, 1989, p. 1418.

³³ Concerning Poland, the extract from the report of the meeting reads: "Having ascertained in accordance with article X of the Treaty, on the basis of information provided about scientific investigations being undertaken at the station and of an inspection carried out under article VII of the Treaty . . .", *Handbook, op. cit.*, p. 1419. The wording now used for other States is: "... on the basis of information provided about scientific expeditions and investigations carried out at their stations . . .", *ibid.*, p. 1423, with a variant, "investigations" being replaceable by "research".

³⁴ See the list in the annex hereto.

³⁵ Australian report on a visit made on 3 January 1986 to the Dumont d'Urville base.

and fourteenth meetings of those Parties examined the question of inspection under Article VII. The United States enumerated five points that each of its teams of observers must verify during inspection visits:

The relationship of the logistic support and main activities at the station to the information provided in the annual exchanges;

The questions prohibited by the Treaty, such as military exercises, nuclear explosions, deposit of radioactive waste material and weapons testing;

The quantity of light firearms;

The preservation and conservation of the living resources and the protection of the environment (including the treatment and removal of wastes, air and water pollution, and nuisances caused to habitats by noise or construction);

Observance of measures for the protection of historic sites, especially the protected zones and sites of special scientific interest designated in the recommendations adopted at consultative meetings under the Antarctic Treaty.³⁶

Every delegation of observers receives in addition a far more detailed checklist so as to ensure the total coverage of each site.

Under the terms of the Antarctic Treaty (art. IX, para. 3), the reports arising out of inspection missions are submitted to the consultative Parties. States seem favourably disposed towards the extension of such submissions to all the States Parties and even to wider dissemination. Australia transmits its reports to all the States Parties; the United States favours wider dissemination. It transmits its reports to the United Nations Secretary-General and deposits them at the distribution points for documentation on Antarctica.

It can therefore be seen that, in the system for Antarctica, physical verification of the facts is based on a complex set of observations which go far beyond the inspections provided for in Article VII of the Treaty.

The information may be obtained with or without intrusion into the territory to which the surveillance relates: satellites and aircraft supplement the information from research workers and observers. The spontaneous information provided by research workers may be submitted at any time. The regular reports on scientific activity ensure that there is some rhythm to the supply of information. The number and frequency of the inspection reports vary, but the number of missions is tending to increase. The dissemination of the results to all the States Parties and in some instances to national information centres and international secretariats ensures non-member States and NGOs of at least a minimum of information.

The process of explicitly inter-State verification, with only functional immunity, is, thus, tending to become international. The shift is not occurring automatically, through changes in peoples' status, but in a more complex fashion. The broad dissemination of information outside the circle of consultative Parties is whetting the interest of third States and international organizations.

³⁶ United States note ANT/XIV/WP.8.

The degree of precision of the processes employed - quite low in terms of the strict wording of the Treaty - is tending to rise. The standardization of mission reports, in keeping with the guidelines laid down in the recommendations, is contributing towards this change. Moreover, national "papers" are already alluding to the prospect of inspection reports moving in the same direction. All of these documents are parts of a complex whole. *A priori*, inspection functions solely on the basis of Article VII, but in fact a real process of combination occurs. The confidence-building measures become "alert measures" in the event of disparity, or else serve as bench-marks in the case of "routine" inspections initiated without any specific concern on the part of those sending the observers. It is in fact the confidence-building measures which give value to the inspections: how can an observer discern the technical specifications of equipment that he inspects visually? Even if they stayed for quite a while - and that is possible, since no limit is set in the Treaty - observers would most likely be unable to detect any more than gross violations. Clearly, the exchange of scientists and the regular reports are most essential to the credibility of inspection.

II - The Operation of Verification

Verification, in the sense of comparing of the facts collected with the rule in force, poses three separate problems. Who verifies? Each Party in isolation or the group of States as a whole? Under which provisions of the Antarctic Treaty is the comparison of conduct with the rule mainly based? What are the consequences of a breach of the rule?

THE VERIFIERS

The text holds out two possibilities: individual verification, whereby each State assesses for itself the information that it obtains through reports and physical surveillance; and group verification on the occasion of meetings of the consultative Parties.

Any State may become aware, either through information resulting from scientific exchanges or through the inspections it undertakes, of facts or of counts that lead it to conclude that there has been disregard of the obligations of commission or omission contained in the Treaty or the recommendations. Or it may feel that, in terms of the lack of precision of the information they contain, the documents with which it has been provided do not match the undertakings: while nothing in them appears erroneous, the inadequacy of the observations as transmitted prevents the necessary "judgement" being made. Like the collection of the facts, verification can be unilateral.

The States participating in the consultative meetings can together assess the facts brought to their attention. Each State comes armed with its own information, particularly that obtained through the operation of Article VII; together they exchange information and consult one another on matters of mutual interest. In these circumstances, two types of group approach to verification are possible. In the one,

States co-operate so that, by providing each other with information, each adopts as well-informed a position as possible. In the other, it is the group of States which, acting as a whole, carries out the verification. The first approach is merely co-operative, the second collective. The first is suitable for "normal" meetings under Article IX, where representatives can only make recommendations, while the second can be used for admitting to the circle of "consultative Parties" States which have become parties by accession.

It may be possible to perceive three types of verification within the framework of the Antarctic Treaty: unilateral assessment, which results from a purely State operation; inter-State assessment, when each provides information to the other and which can support concerted verification of probable, but not certain, adherence; and international assessment, in which the group takes a collective position.

Individual verification can give rise, on the basis of identical facts, to totally divergent conclusions. That is the normal result of sovereignty and of the relative nature of the assessments of individual Member States.

Concerted verification reduces that risk but cannot eliminate it. Even if it results in a recommendation, that recommendation might not become obligatory to all States since each of them is able to block it.³⁷

Collective verification results in a common viewpoint, a genuine international position from which consequences are drawn as to the functioning of the Treaty. This position enables a State to accede to the status of consultative Party; it also enables a label to be placed on the State's past and present conduct in Antarctica. All the meetings to admit a new consultative Party - the special meetings - include collective recognition that the candidate(s) has (have) discharged the obligations and respected the prohibitions laid down in the Treaty.

RULES VERIFIED

The Treaty contains prohibitions, obligations of commission and objectives.

Article I prohibits measures of a military nature, some of which are enumerated: the establishment of bases or fortifications, the carrying out of military manoeuvres and the testing of any type of weapon. The Article resolves a problem of interpretation that might otherwise have arisen: action of a military nature and the rank of persons are two different things. Thus military personnel may function as research workers or carry out any peaceful mission.

Article IV prohibits States from extending their sovereignty or making new claims.³⁸

³⁷ M. W. Mouton, *op. cit.*, pp. 263-264: "The measures shall become effective when approved by all the Governments whose representatives were entitled to participate in the meetings. This means that the unanimity rule is adopted, and each of these Governments has a veto".

³⁸ Mention may be made in this connection of the problem of categorization posed by the exclusive economic zones that certain States mean to obtain within the area of application of the Treaty.

Article V of the Treaty contains a clear ban on nuclear explosions in Antarctica and the disposal there of radioactive waste material. Hence, even peaceful nuclear explosions are ruled out in this area.³⁹

Those bans are sufficiently clearly defined for the reports setting forth the facts (collected during scientific missions, from international organizations and through inspections) to enable an assessment to be made of how far the facts comply with the rules. Their importance for Articles I and V is such that the States Parties to the Convention on the Conservation of Antarctic Marine Living Resources recognize themselves to be bound by those provisions even if they are not Parties to the 1959 Treaty.

Difficulties might arise concerning the precise rules to be taken into account in verifying the application of the obligations in Article V. That Article refers to such other instruments as may be concluded concerning the use of nuclear energy, including nuclear explosions and the disposal of radioactive waste material. For those instruments to be applicable, all the consultative Parties must agree to them. The number of consultative Parties is, however, variable. The history of the Treaty offers only cases of growth, but there could be withdrawals since, apart from the 12, the others are subject to the verification of their interest in activity in Antarctica. Would new arrivals that were not Parties to such agreements call in question their application to Antarctica? States that are apparently all bound by a single instrument because their names appear on the list of ratifying Powers may very well not be so bound if there are reservations; a multilateral treaty that allows reservations may be no more than a network of bilateral agreements which differ from each other. The texts that govern accession to the Treaty or membership of the group mentioned in Article IX do not provide for any machinery for the integration of those treaties into the "overall legal structure" through recommendations.

The obligations of commission being more difficult to interpret, verifying them is more complex. The exchanges of observations, personnel and information provided for in Article III are to be carried out as "feasible and practicable". Although they are, as has been seen, very much a part of the collection of preliminary facts, these exchanges are the fruit of a less stringent obligation than that in Article VII, paragraph 5, which stipulates that each State "shall" furnish information. This permits twofold verification: verification of the existence of the notifications and verification of their relevance. The first kind of verification is simple since failure to produce the documents required is easy to prove. Relevance is more complicated. It can be difficult to evaluate a State's intentions even when the rule obliges it to notify some of them.

Under Article X, each of the Contracting Parties "undertakes to exert appropriate efforts, consistent with the Charter of the United Nations, to the end that no one engages in any activity in Antarctica contrary to the principles or purposes of the

³⁹ On this question, see Fred Tanner, *op. cit.*, p. 95, and the comparisons with the Treaties of Tlatelolco and Rarotonga.

present Treaty". A complex article which, by referring to prohibitions in the Treaty and to its principles and purposes, imposes an obligation of verification on the Contracting Parties at the same time as it raises the much-mentioned problem of the Treaty's effect with respect to third Parties.⁴⁰

Each time there is a candidature from a State that considers itself sufficiently involved in Antarctica, the States that already belong to the group that participates in the consultative meetings must verify, and confirm that they have verified, that the candidate has activities in keeping with the principles and objectives of the Treaty. That verification provides a sign that sanctions may ensue in the event of failure to comply with the obligations of the Treaty, with its principles and purposes.

More generally, all the provisions of the Treaty can contribute towards the assessment and attribution of activity inasmuch as they severally and jointly uphold the principles and purposes of the Treaty.

SANCTIONS

If it reveals conduct contrary to the rule, verification may, in certain cases, give rise to sanctions, but this does not always lead to real constraint capable of ensuring conduct in keeping with the Treaty.

The unilateral verification measures that result in a single State's juridically assessing another's conduct as improper and contrary to the obligations under the Treaty do not entail anything more than a dispute between the perpetrator of that conduct and the verifier. Should the dispute persist, those States must consult one another with a view to finding, by traditional diplomatic means or some jurisdictional act, a solution to their legal disagreement concerning the meaning of the Treaty or the impact, or perhaps the reality of the alleged conduct. By joint agreement, the matter may be referred to the International Court of Justice for settlement. This is only an obligation of means. Nothing guarantees a solution having the value of law between the disputants.

Although countermeasures compatible with the Charter are lawful in general and included in Article X of the Treaty, it seems unlikely that they would have any effect in the event of a unilateral decision. The situation would undoubtedly be different in the case of a collective operation.

The States Members of the consultative meetings have at their disposal (in relation to certain Parties by accession) countermeasures that are plausible and altogether compatible with the Charter. A Party by accession that was not a consultative Party and which did not discharge the obligations in the Treaty could not escape the most obvious of sanctions: non-admission to the group - even if it had made an application, and possessed one or more stations or supported polar expeditions. The unanimous decision it would need to join the others would now be lacking.

⁴⁰ All the commentators draw attention to the hearings of the United States representative before the Senate which affirmed the intention to legislate for third parties.

It would seem that this sanction could also be applied against Parties by accession - but not the original signatories - that participate in the meetings under Article IX. There has not, as yet, been any case in which a State first "warmly"⁴¹ welcomed into the group has subsequently been coldly shown the door. However, that sanction must be possible because, as Article IX itself says, a State that has been authorized to send representatives to the consultative meetings may do so only during such time as it demonstrates its interest in Antarctica by conducting substantial scientific research activity there, presumably in an authorized manner.

It could be argued that the State at fault should be kept in the group if, despite its non-compliance with the obligations, it has a proven interest, say, in a station in place or a scientific expedition. But the interest itself can only be of account in the context of observance of the Treaty obligations. Parties by accession are welcomed by the consultative Parties when the latter are certain that everything is in accordance with Article X; they remain "guests" at the meetings.

A dispute might arise between two or more Article IX States, or between one of them and a State outside that group. As regards resolving disputes, there are no procedures distinct from those proposed for a conflict between only two States on the basis of a unilateral assessment.

The plausible sanctions cannot, therefore, affect all States equally. The provisions that provide for the possibility of reactions compatible with the Charter can be applied to all States, but they can only be initiated by the States Parties to the Treaty. That is a privilege frequently remarked upon. If aimed at a non-Party, the impact of sanctions may be minimal. Sanctions only take on real substance for a State that seeks entry to the circle of Parties by accession and for one that is not clearly resolved to conduct operations in Antarctica in defiance of the Treaty of 1 December 1959.⁴² In fact, such a State would not pass the test of unanimity provided for in Article XIII.⁴³

If the targets are Parties, the sanctions can only be truly effective against Parties by accession that participate or wish to join in the meetings in addition to the original signatories.

The verification system therefore tends to ensure exclusivity in Antarctica for the States Parties, whether they are parties by accession or original signatories. That exclusivity no doubt explains both the pressure from the States that remain outside the Antarctic system and want a say in events in what is claimed to be a part of the common heritage of humanity and the sympathetic attitudes of the States that disseminate information through the United Nations Secretariat and national information centres.

⁴¹ To quote the text.

⁴² Many observers think that, in such a case, the system would collapse.

⁴³ Cf. *AFDI*, 1983.

It also tends to ensure the pre-eminence of the original signatories over the Parties by accession, including the very first of them whose relevant legal instruments were deposited before the Treaty entered into force.⁴⁴

The original signatories therefore appear to be the guarantors that scientific research and activity in Antarctica meet the requirements of ordinary law.

Possible changes are tending towards the increased internationalization of the means of inspection and of inspection procedures. These may not all be equally desirable.

The internationalization of "observations" conducted pursuant to Article VII would seem quite easy to effect and, if this can rationalize costs, there may be an increase in operations conducted by international inspectors from States Parties.

For practical reasons, it is clear that the provisions concerning this internationalization of inspection would have to be similar to the decisions taken by the Commission for the Conservation of Antarctic Marine Living Resources, whose "observers" already attend meetings of the consultative Parties to the 1959 Treaty⁴⁵ in accordance with the arrangements contained in the revised rules of procedure since 1987.⁴⁶ A degree of uniformity in the physical procedures for collecting facts could only strengthen the application of the treaties relating to Antarctica.

The acceptance of an inspection team comprised solely of international civil servants or agents appointed totally independently of States seems so alien to the particular "spirit" of the Treaty as to be ruled out as a practicable proposal for amendment. It would be more realistic to think in terms of an international group appointed by common consent by the original signatories and comprising nationals of all the Parties or of just the consultative Parties.

A recommendation inviting States to generalize the practice of joint inspections might be a simpler solution and capable of enhancing the international credibility of inspection reports, which might otherwise - although the case has apparently not yet arisen - be suspected of reciprocal complaisance or of an overly understanding approach.

The sanctions might also be made to apply to the original signatories. While it would be out of the question to strip States of the status they have by reason of the anteriority of their interest in the Treaty zone, consideration might be given to suspending that status on the decision of the other original signatories if it was proved that they no longer had a current interest, with missions carried out in compliance with the principles of the Treaty. Collective verification of such disregard of their obligations would thus lead to suspension of the exercise of their right. In short, by ceasing to respect its international obligation, the State would incur a liability and the suspension of its right would correspond to the period necessary for remedying its conduct without necessarily seeming to be a penalizing sanction.

⁴⁴ Poland, *RINU*, Vol. 402, No. 5578, p. 73. Cf. D. Vignes, "La Convention sur la conservation de la faune et de la flore en Antarctique", *AFDI*, 1980, p. 751.

⁴⁵ The Convention, signed at Canberra and signed on 20 May 1980, came into force on 7 April 1982.

⁴⁶ Handbook, *op. cit.* Revised Rules of Procedure, 1987, D.4.

In summary, the Antarctic Treaty marked a step forward in the monitoring of compliance with international obligations. Its contribution to judicial verification *stricto sensu* is perhaps not so significant.

The Treaty also marked the beginning of an upsurge of interest in this desolate region that would be concretized through increased international regulation.

The States that are going to tackle the revision of a text which is 30 years old and which has, on the whole, proved satisfactory to those who have used it will have to resolve a political problem. The States which, for one reason or another, have remained outside the Treaty bond want either guarantees or the communalization of the continent. A satisfactory response to one of the questions will depend on a satisfactory response to the other. It is in the interest of the States that play a role in Antarctica to continue to be able to do so. Their persuasiveness will depend on the level of assurance they offer to third Parties, the clarity of their procedures and the transparency of the verification processes.

Annexes

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Table 1: Procedures related to the Antarctic Treaty of 1959
Main Treaty Provisions and Monitoring and Verification Methods

	Factfinding							Assessment procedures					
	0	1	2	3	4	5	6	7	8	9	10	11	12
Establishment of data base													
Limitation of use													
Limitation of deployment													
Limitation of testing													
Limitation of possession													
Limitation of production													
Limitation of transfer													
Prohibition of use													
Prohibition of deployment													
Prohibition of testing													
Prohibition of possession													
Prohibition of production													
Prohibition of transfer													
Destruction													

0 = No method; 1 = National Technical Means; 2 = Exchange of data; 3 = Consultation; 4 = Control Posts/Observation; 5 = On-site inspection on a State territory; 6 = On-site inspection on a non-State territory; 7 = IAEA Safeguards; 8 = Review Conference; 9 = Submission of report; 10 = Consultation; 11 = Referral to an international organization; 12 = Referral to the International Court of Justice.

For further explanation see also pages 89 and 32-34.

Explanatory note on Table 1

The Antarctic Treaty prohibits any measure of a military nature and prohibits weapon tests (Article I, paragraph 1).

Article V prohibits any nuclear explosions, including peaceful nuclear explosions.

At the time of signature no declared military activities took place, consequentially no elimination of military bases was needed.

Factfinding methods

The deployment and testing prohibition may be verified through: Exchange of data (Article VII, paragraph 5 and Article IX, paragraph 1), Consultation (Article IX, paragraph 1), Aerial observation assimilated here to method No.4, Observation (Article VIII, paragraph 4) and On-Site Inspection (Article VII, paragraph 2 and 3).

Aerial observation and general on-site inspection may be carried out by all members of the meeting of Contracting Parties, but is undertaken unilaterally, even though a joint inspection is possible. Exchange of data and consultation are carried on in the Meeting of Contracting Parties and between concerned Parties Members of the Treaty.

Assessment procedures

Article XII paragraph 2 provides for a Review Conference 30 years after entry into force of the Treaty, upon request by one of the Contracting Parties. Requests may only be made by members participating in the meeting of Contracting Parties. During the Conference all parties participate and have the same voting rights (see Article XII). Reports are elaborated unilaterally and submitted to the meeting of contracting parties. In case of a joint inspection, a joint report may be elaborated. See for instance the report of New Zealand and the United Kingdom.

Article IX paragraph 3 provides for reports of national inspectors submitted to the meeting of Contracting Parties.

Consultation is provided for in Article VIII, paragraph 2, Article IX and Article XI, paragraph 1, and is to be undertaken immediately.

Referral to the International Court of Justice is provided for in Article XI, paragraph 2 and is optional.

The Relevant Treaty Articles

THE ANTARCTIC TREATY (1 DECEMBER 1959, WASHINGTON)

(...)

ARTICLE I

(1) Antarctica shall be used for peaceful purposes only. There shall be prohibited, *inter alia*, any measures of a military nature, such as the establishment of military bases and fortifications, the carrying out of military manoeuvres, as well as the testing of any type of weapons.

(2) The present Treaty shall not prevent the use of military personnel or equipment for scientific research or for any other peaceful purpose.

ARTICLE V

(1) Any nuclear explosions in Antarctica and the disposal of radioactive waste material shall be prohibited.

(...)

ARTICLE VII

(1) In order to promote the objectives and ensure the observance of the provisions of the present Treaty, each Contracting Party whose representatives are entitled to participate in the meetings referred to in Article IX of the Treaty shall have the right to designate observers to carry out any inspection provided for by the present Article. Observers shall be nationals of the Contracting Parties which designate them. The names of observers shall be communicated to every other Contracting Party having the right to designate observers, and like notice shall be given of the termination of their appointment.

(2) Each observer designated in accordance with the provisions of paragraph 1 of this Article shall have complete freedom of access at any time to any or all areas of Antarctica.

(3) All areas of Antarctica, including all stations, installations and equipment within those areas, and all ships and aircraft at points of discharging or embarking cargoes or personnel in Antarctica, shall be open at all times to inspection by any observers designated in accordance with paragraph 1 of this Article.

(4) Aerial observation may be carried out at any time over any or all areas of Antarctica by any of

the Contracting Parties having the right to designate observers.

(5) Each Contracting Party shall, at the time when the present Treaty enters into force for it, inform the other Contracting Parties, and thereafter shall give them notice in advance, of

(a) all expeditions to and within Antarctica, on the part of its ships or nationals, and all expeditions to Antarctica organized in or proceeding from its territory;

(b) all stations in Antarctica occupied by its nationals; and

(c) any military personnel or equipment intended to be introduced by it into Antarctica subject to the conditions prescribed in paragraph 2 of Article I of the present Treaty.

ARTICLE VIII

(1) In order to facilitate the exercise of their functions under the present Treaty, and without prejudice to the respective positions of the Contracting Parties relating to jurisdiction over all other persons in Antarctica, observers designated under paragraph 1 of Article VII and scientific personnel exchanged under subparagraph 1 (b) of Article III of the Treaty, and members of the staffs accompanying any such persons, shall be subject only to the jurisdiction of the Contracting Party of which they are nationals in respect of all acts or omissions occurring while they are in Antarctica for the purpose of exercising their functions.

(2) Without prejudice to the provisions of paragraph 1 of this Article, and pending the adoption of measures in pursuance of subparagraph 1 (e) of Article IX, the Contracting Parties concerned in any case of dispute with regard to the exercise of jurisdiction in Antarctica shall immediately consult together with a view to reaching a mutually acceptable solution.

ARTICLE IX

(1) Representatives of the Contracting Parties named in the preamble to the present Treaty shall meet at the City of Canberra within two months after the date of entry into force of the Treaty, and thereafter at suitable intervals and places, for the purpose of exchanging information, consulting together on matters of common interest pertaining to Antarctica, and formulating and considering, and recommending to their Governments, measures in

furtherance of the principles and objectives of the Treaty, including measures regarding:

(a) use of Antarctica for peaceful purposes only;

(b) facilitation of scientific research in Antarctica;

(c) facilitation of international scientific co-operation in Antarctica;

(d) facilitation of the exercise of the rights of inspection provided for in Article VII of the Treaty;

(e) questions relating to the exercise of jurisdiction in Antarctica;

(f) preservation and conservation of living resources in Antarctica.

(2) Each Contracting Party which has become a Party to the present Treaty by accession under Article XIII shall be entitled to appoint representatives to participate in the meetings referred to in paragraph 1 of the present Article, during such time as that Contracting Party demonstrates its interest in Antarctica by conducting substantial scientific research activity there, such as the establishment of a scientific station or the despatch of a scientific expedition.

(3) Reports from the observers referred to in Article VII of the present Treaty shall be transmitted to the representatives of the Contracting Parties participating in the meetings referred to in paragraph 1 of the present Article.

(4) The measures referred to in paragraph 1 of this Article shall become effective when approved by all the Contracting Parties whose representatives were entitled to participate in the meetings held to consider those measures.

(5) Any or all of the rights established in the present Treaty may be exercised as from the date of entry into force of the Treaty whether or not any measures facilitating the exercise of such rights have been proposed, considered or approved as provided in this Article.

ARTICLE X

Each of the Contracting Parties undertakes to exert appropriate efforts, consistent with the Charter of the United Nations, to the end that no one engages in any activity in Antarctica contrary to the principles or purposes of the present Treaty.

ARTICLE XI

(1) If any dispute arises between two or more of the Contracting Parties concerning the interpretation or application of the present Treaty, those Contracting Parties shall consult among themselves with a view to having the dispute resolved by negotiation, inquiry, mediation, conciliation, arbitration, judicial settlement or other peaceful means of their own choice.

(2) Any dispute of this character not so resolved shall, with the consent, in each case, of all Parties to the dispute, be referred to the International Court of Justice for settlement; but failure to reach agreement on reference to the International Court shall not absolve Parties to the dispute from the responsibility of continuing to seek to resolve it by any of the various peaceful means referred to in paragraph 1 of this Article.

ARTICLE XII

(...)

(2) (a) if after the expiration of thirty years from the date of entry into force of the present Treaty, any of the Contracting Parties whose representatives are entitled to participate in the meetings provided for under Article IX so requests by a communication addressed to the depositary Government, a Conference of all the Contracting Parties shall be held as soon as practicable to review the operation of the Treaty.

Contracting Parties

The Antarctic Treaty was signed in Washington on 1 December 1959 by 12 States, and entered into force for those States on 23 June 1961. Below are listed in alphabetical order the dates of ratification of the Treaty by the original signatories, and the dates of accession or succession by other States. OS = Original Signatory; CP = Consultative Party; AS = Acceding State.

Acceding States marked * became Consultative Parties on the following dates: Poland, 29 July 1977; Federal Republic of Germany, 3 March 1981; Brazil and India, 12 September 1983; People's Republic of China and Uruguay, 7 October 1985; German Democratic Republic and Italy, 5 October 1987; Spain and Sweden, 21 September 1988; Peru, Republic of Korea and Finland, October 1989. Papua New Guinea succeeded to the Treaty after becoming independent from Australia.

State	Date	Status	State	Date	Status
Argentina	1961	OS/CP	Hungary	1984	AS
Australia	1961	OS/CP	India	1983	AS/CP*
Austria	1987	AS	Italy	1981	AS/CP*
Belgium	1960	OS/CP	Japan	1960	OS/CP
Brazil	1975	AS/CP*	Korea, Democratic		
Bulgaria	1978	AS	People's Republic of	1987	AS
Canada	1988	AS	Korea, Republic of	1986	AS/CP*
Chile	1961	OS/CP	Netherlands	1967	AS
China	1983	AS/CP*	New Zealand	1960	OS/CP
Colombia	1989	AS	Norway	1960	OS/CP
Cuba	1984	AS	Papua New Guinea	1981	AS
Czech and Slovak Federal			Peru	1981	AS/CP*
Republic	1962	AS	Poland	1961	AS/CP*
Denmark	1965	AS	Romania	1971	AS
Ecuador	1987	AS	South Africa	1960	OS/CP
Finland	1984	AS/CP*	Spain	1982	AS/CP*
France	1960	OS/CP	Sweden	1984	AS/CP*
German Democratic			Union of Soviet		
Republic ¹	1974	AS/CP*	Socialist Republics	1960	OS/CP
Germany, Federal			United Kingdom	1960	OS/CP
Republic of ¹	1979	AS/CP*	United States of America	1960	OS/CP
Greece	1987	AS	Uruguay	1980	AS/CP*

¹ In 1990 the two States merged forming Germany.

Antarctic Inspection Checklist
(Submitted by the United States)

The checklist was developed by the United States Inspection Team for use during inspection.

Physical Description	Equipment Facilities
• Number of buildings • Landing or dock facilities • History of the site • Age of the buildings • New or recent construction • Future plans • Sketch or map of the buildings	• Generators • Incinerators • Fuel Storage • Notable Scientific equipment • Radioisotope handling equipment • Medical facilities • Water system: type, capacity
Personnel	Vehicles
• Personnel list • Total number • Winter-over staff • Responsible agency or ministry • Length of tour of personnel • Number of military	• Boats • Aircraft • Motor vehicles • Cargo handling or earth-moving equipment • Other
Primary Mission	Re-Supply
• Commander's view of primary mission • Other staff's views	• Frequency • How accomplished?
Scientific Programme	Arms
• Main type of study • Types of scientists • How is research published? • How is programme determined, or approved? • Foreign scientists	• Weapons • Ammunition/explosives • Military activities • Military officers/personnel
Communications	
• Radio transmission frequency • Times, frequencies are monitored • Stations time zone • Satellite communications	

Chapter 3

The Nuclear Test-Limitation Treaties (1963, 1974, 1976, 1990)

Jozef Goldblat

I - Introduction

The atomic weapons era began with a test conducted by the United States on 16 July 1945 at Alamogordo, New Mexico. Since then, until the end of 1990, as many as 1,906 nuclear explosions have been carried out by six States: the United States (929), the Soviet Union (714), France (183), the United Kingdom (43), China (36) and India (1).¹ Efforts to bring about a prohibition of all nuclear test explosions started in the early 1950s, but thirty years of deliberations and negotiations for such a ban have so far resulted only in partial agreements:

- The multilateral treaty banning nuclear weapon tests in the atmosphere, in outer space and under water, called the Partial (or Limited) Test Ban Treaty (PTBT or LTBT) - signed on 5 August 1963;
- The bilateral US-Soviet treaty limiting underground nuclear weapon tests, called the Threshold Test Ban Treaty (TTBT) - signed on 3 July 1974; and
- The bilateral US-Soviet treaty regulating underground nuclear explosions for peaceful purposes, called the Peaceful Nuclear Explosions Treaty (PNET) - signed on 28 May 1976.

The PTBT entered into force on 10 October 1963. By 1 January 1990 it had attracted 119 adherents, including the Soviet Union, the United Kingdom and the United States. The remaining nuclear-weapon powers - France and China - have not joined the PTBT, but both stopped testing in the atmosphere: the former in 1975, the latter in 1981. The TTBT and the PNET had remained unratified for many years, mainly because of US concerns over the adequacy of their verification provisions. It was only when the United States and the Soviet Union signed, on 1 June 1990, two new verification protocols to these treaties, that their ratification became possible. They entered into force on 11 December 1990. Nevertheless, even during the pre-ratification period, the signatory States declared that they were observing the agreed limitations.² The

¹ These are SIPRI (Stockholm International Peace Research Institute) data based on information from, among other sources, the Swedish National Defence Research Institute and the Washington-based Natural Resources Defence Council.

² According to international law, States that have signed but not ratified a treaty are obligated to refrain from acts that would defeat the object and purpose of the treaty, until such time as they have made their intention clear not to become party to it.

requirement of fully satisfactory controls has also been a stumbling block in the negotiations for a complete ban on nuclear weapon tests and one of the reasons why such a ban has not yet been achieved.³

This paper reviews the basic obligations of the Parties under the existing nuclear test-limitation treaties, the procedures and methods of verification envisaged in these treaties, as well as the problems of compliance that have arisen in the course of their implementation.

II - The Partial Test Ban Treaty (PTBT)

BASIC OBLIGATIONS

The prohibition under the PTBT covers nuclear weapon test explosions and "any other" nuclear explosion in three specified environments - the atmosphere, outer space and under water - at any place under the jurisdiction or control of the Parties (Articles I, 1). The inclusion of the term "other" means that an explosion of a tested nuclear weapon or a nuclear explosion for peaceful purposes in any of the mentioned environments is also prohibited.⁴ The phrase "under the jurisdiction or control" extends the prohibition to Non Self-Governing Territories administered by States Parties, as well as territories under military occupation. Nuclear explosions conducted underground, whatever their purpose or yield, are not covered by the Treaty. However, there is a prohibition on any such explosion that causes radioactive debris to be present outside the territorial limits of the State under whose jurisdiction or control the explosion is carried out (Article I, 1 (b)). This means that an underground explosion breaking the surface of the ground is still considered as "underground" as long as it does not produce radioactive debris detectable outside the testing country's boundaries. The Parties to the PTBT also undertook to refrain from "causing, encouraging, or in any way participating" in the carrying out of nuclear explosions by other nations in the prohibited environments (Article I, 2). Assistance in conducting underground tests is not prohibited by the PTBT, as long as they do not produce the radioactive effects described above. (Since 1962, all British tests have been conducted jointly with the United States at the US test site.)

³ For the historical record see Greb, G., "A survey of past nuclear test ban negotiations", in Goldblat, J. and Cox, D. (eds.), *Nuclear Weapon Tests: Prohibition or Limitation?*, Oxford University Press, 1988.

⁴ The basis for the last phase of the negotiations leading to the PTBT was a draft treaty submitted at the Eighteen-Nation Disarmament Conference in Geneva by the delegations of the UK and the USA. Article I of the draft prohibited nuclear weapon tests. Peaceful purpose explosions were dealt with in Article II: they were permitted but were subject to controls. In the course of the negotiations with the USSR, draft Article II was dropped altogether, one of the reasons being that it is difficult to differentiate between military and non-military explosions.

PROCEDURES AND METHODS OF VERIFICATION

The PTBT did not set up an international mechanism to verify whether the commitments were being complied with. The Parties were presumed to check compliance with the Treaty unilaterally, using their own means of verification. Apparently, they were confident that these means were sufficient to detect and identify clandestine tests in the three prohibited environments. Just a week after the PTBT entered into force, the United States placed in orbit the first pair of the so-called Vela satellites carrying sensors to detect neutrons as well as gamma- and X-radiation emitted by a nuclear detonation in space. Subsequently, optical sensors and an electromagnetic pulse detector were added to detect nuclear bursts in the atmosphere. The operational life of the satellites was expected to be a few months, but in fact they all operated successfully for several years. The last Vela satellite was launched in 1970, but continued operating until 1984 when it had to be turned off. Currently, the United States is deploying PTBT verification systems aboard the Global Positioning System (GPS) navigation satellites. When fully operational, the nuclear detonation detection system (NDS) on GPS will be able to detect atmospheric nuclear explosions anywhere on earth. In addition, the GPS/NDS has an X-ray detector for monitoring tests in space. Several operational GPS/NDS satellites are already in orbit and the full constellation of 24 is to be deployed by 1993. In addition to these systems, the United States has deployed nuclear explosion detectors aboard a number of other satellites.⁵

COMPLIANCE

In September 1979, a US satellite observed a flash in the southern hemisphere which could have been a low-yield atmospheric nuclear explosion. A panel of experts convened by the White House Office of Science and Technology Policy determined that the event was "probably" not a nuclear detonation, but this determination was questioned by the US Defence Intelligence Agency.⁶ In spite of the uncertainties, South Africa, a Party to the PTBT since 1963, was accused of having tested a nuclear weapon,⁷ possibly with Israeli involvement.⁸ The basis for this allegation was the fact that the event had occurred in the vicinity of South Africa which had not formally renounced the acquisition of nuclear weapons, as well as the fact that South Africa was operating a uranium enrichment plant capable of producing nuclear weapon-grade material but not subject to nuclear safeguards administered by the International Atomic Energy Agency (IAEA). A strong indication that South Africa was interested in developing a nuclear weapon had been revealed earlier, in August 1977, when Soviet

⁵ W. Doyle Evans, *The Limited Test Ban Treaty*, Paper submitted to the Second Beijing Seminar on Arms Control, 3-10 April 1990.

⁶ The US Administration decided not to continue this investigation.

⁷ *South Africa's Plan and Capability in the Nuclear Field*, Report of the Secretary-General, UN General Assembly document A/35/402, 9 September 1980.

⁸ Pry, P., *Israel's Nuclear Arsenal*, Boulder, Westview Press, 1984.

and US satellites observed in the Kalahari Desert what appeared to be preparation of a site for a nuclear test in the atmosphere. However, South Africa did not express an intention to withdraw from the PTBT and, after diplomatic interventions by the United States and some other Western countries, it agreed to dismantle the suspected installations.⁹

The commitment by the Parties to the PTBT not to provide assistance to other States in carrying out nuclear tests in the prohibited environments is not subject to any system of control. One could argue that such a commitment does not require verification because it is self-enforceable. Indeed, it seems unlikely that States would help others in obtaining military benefits that they themselves had given up. However, such an eventuality cannot be excluded.

Neither is the PTBT obligation not to contaminate other countries with radioactive debris subject to verification procedures. As a matter of fact, it may be impossible to contain completely under the Earth's surface the radioactive products produced by underground nuclear explosions. Once released into the atmosphere, these products may pass over State frontiers. In the absence of an international supervisory body, it is difficult to establish definitively whether this has actually happened.¹⁰ Moreover, it is not clear whether *any* amount of radioactive material travelling beyond the borders of a testing State constitutes a violation, or only what might be considered a dangerous amount. In the latter case, a threshold of radiation hazard would have to be defined using some objective criteria. But this has not been done. The matter has been rendered even more complicated by the fact that in the Russian-language version of the PTBT the term used for "debris" is *osadki*, which means deposit or fall-out. However, not all radioactive debris is necessarily deposited on the ground as fall-out. Consequently, the relevant ban is less restrictive in the Russian-language text than in the English-language one. It is, however, clear that ascertained harm to the life, health or property of others, inflicted as a result of nuclear weapon tests, would amount to an international tort, irrespective of the PTBT.

Yet another clause of the PTBT, that which prohibits the causing, encouraging or participating in the carrying out of nuclear explosions by others, is difficult to verify. This is especially true in relation to the ban on "encouraging" which may include moral support or economic help indirectly used by the recipient to pay for the cost of explosions.

The record of compliance with the PTBT is deemed to be relatively good. In the first years after the signing of the PTBT, whenever radioactive substances released

⁹ Murray Marder and Don Oberdorfer, "How West, Soviets Moved to Head Off S. Africa A-Test", *Washington Post*, August 28, 1977.

¹⁰ In 1983, in the course of discussions on possible ways of verifying compliance with a comprehensive nuclear test ban, Sweden submitted a proposal for international surveillance of airborne radioactivity (ISAR). A system for ISAR would consist of some 50-100 fully equipped sampling stations and about half a dozen regional measurement laboratories, one on each continent. At each sampling station air would be continuously blown by a pump through a glass fibre filter. The filters would be changed once or twice a week and sent for analysis to the regional measurement laboratories. (Committee on Disarmament document CD/403.)

from US and Soviet underground nuclear explosions spread outside the territory of the testing Party, the United States and the Soviet Union appeared to treat venting of radioactivity as no more than a sporadic "technical" breach. Only in the mid-1980s did the two Powers begin formally to accuse each other of violating the Treaty because of such occurrences. However, there has been no charge of a material breach by any Party.

III - The Threshold Test Ban Treaty (TTBT)

BASIC OBLIGATIONS

The TTBT established a limit on the amount of energy that can be released by underground nuclear explosions, that is, on their explosive yield. The Parties - the Soviet Union and the United States - are each obliged "to prohibit, to prevent and not to carry out" any underground nuclear weapon test having a yield exceeding the threshold of 150 kilotons (the equivalent of 150 000 tons of trinitrotoluene, TNT, high explosive) at any place under their respective jurisdictions or control (Article I, 1). The term "test" applies to an underground nuclear explosion, or to two or more underground explosions taking place within one-tenth second and separated from each other by no more than two kilometres. The yield attributed to a test made up of more than one explosion is the aggregate of the yields of the individual explosions within the test.

In addition to the limit placed on the size of tests, each Party committed itself to restrict the number of tests to a "minimum".

PROCEDURES AND METHODS OF VERIFICATION AS ORIGINALLY AGREED

The TTBT stipulates that each Party will use "national technical means" of verification at its disposal to provide assurance of compliance with the provisions of the Treaty (Article II).

To verify compliance with a threshold test ban requires a capability to determine whether an underground event had a strength exceeding the agreed yield limit and, if so, whether it was an explosion or an earthquake. The seismological techniques that help make such a determination utilize seismic stations located at a distance from the explosion site. The seismometers installed at these stations measure ground motions caused by the waves that propagate on the surface of and through the earth after an underground explosion or an earthquake has occurred. The United States has at its disposal numerous seismic stations on its territory as well as on the territory of other countries; some are located along the borders of the Soviet Union. The Soviet network of seismic stations is presumably situated exclusively on its own territory, a circumstance that may limit its ability, as compared to that of the United States, to

detect and determine the yield of explosions carried out outside its borders.¹¹ Whereas distinguishing a nuclear explosion having a yield as high as that permitted by the TTBT from a naturally occurring phenomenon may be relatively easy with the help of existing seismic equipment, it is difficult to establish with certainty through seismology alone that the explosive yield has not exceeded the permissible limit. Seismic signals produced by an underground explosion of a given strength vary depending on a number of factors. Knowledge of the environment in which the test has been carried out is absolutely essential. For this reason, in the Protocol which originally formed an integral part of the TTBT, the United States and the Soviet Union agreed to exchange, at the time of ratification of the Treaty, information needed to establish a correlation between yields of explosions at the specified sites and the seismic signals produced.

The data to be provided by the Parties were to comprise: (a) the geographic co-ordinates of the boundaries of each test site and of the boundaries of the geophysically distinct testing areas therein; (b) information on the geology of the testing areas of the sites (the rock characteristics of geological formations and the basic physical properties of the rock; that is, density, seismic velocity, water saturation, porosity and depth of water table); (c) the geographic co-ordinates of underground nuclear weapon tests, after they had been conducted; (d) yield, date, time, depth and co-ordinates for two nuclear weapon tests for calibration purposes from each geophysically distinct testing area where underground nuclear weapon tests had been or were to be conducted. The yield of explosions for calibration purposes was to be as near as possible to the limit defined in Article I of the Treaty (that is, 150 kilotons) and not less than one tenth of that limit. In the case of testing areas where data were not available on two tests for calibration purposes, data pertaining to one such test were to be exchanged, if available, while data pertaining to the second test would have to be exchanged as soon as possible after a second test having a yield in the above-mentioned range had taken place. There was no requirement to conduct tests solely for calibration purposes (Paragraph 1 of the 1974 Protocol to the TTBT).

The Parties were entitled to specify a new test site or testing area after the entry into force of the Treaty, but information on the geographic co-ordinates and geology was to be transmitted to the other Party prior to using such site or area. The data needed for calibration purposes were also to be transmitted in advance, if available; if not available, they would have to be transmitted as soon as possible after they had been obtained by the transmitting Party (Paragraph 3 of the 1974 Protocol to the TTBT).

Each Party undertook not to interfere with the national technical means of verification of the other Party (Article II, 2). This clause might be understood as a commitment not to use techniques which could reduce the recordable seismic magnitudes. Moreover, the United States and the Soviet Union agreed to the obligation

¹¹ Berger, Gokhberg, Cochran and Nersesov, "Seismic verification and the question of a nuclear test ban", *Scientific World*, Vol. 32, No. 2, 1988.

of conducting all nuclear weapon tests solely within specified testing areas (Paragraph 4 of the 1974 Protocol to the TTBT). This obligation, too, was meant to facilitate verification.

As a complement to technical verification, the Parties undertook to consult with each other, make inquiries and furnish information in response to such inquiries (Article II, 3). This provision was meant to deal with disputes over explosions that seemed to have transgressed the yield restriction.

In signing the Treaty the United States expressed confidence that it would be able to recognize violations as a result of the data-exchange provision. Later, however, it decided that it could not rely on unchecked information supplied by the other side; the Treaty contains no provision for the validation of such data. The United States therefore proposed that the verification clauses of the Treaty contained in the 1974 Protocol be strengthened so as to ensure that the 150-kiloton threshold was actually being observed. Only then, the United States said, would it be prepared to ratify the TTBT as well as the PNET.

EFFORTS TO IMPROVE THE VERIFICATION OF THE TTBT

US-Soviet negotiations aimed at working out new procedures and methods of verification, additional to those included in the 1974 and 1976 Treaties, started in 1987.¹² This time, attention was devoted to the hydrodynamic technique for directly measuring the yield of explosions rather than to the seismological techniques explained above. A third, so-called radio-chemical technique, which is based on an analysis of the nuclear by-products of the explosion, requires data about the weapon design that could reveal sensitive information concerning the characteristics of the weapon and is, therefore, deemed to be excessively intrusive.

The hydrodynamic technique, the US version of which is called CORRTX (continuous reflectometry for radius versus time experiments), is based on the following principle: since an underground nuclear explosion produces a shock wave that propagates radially outwards, cables placed in the emplacement hole containing the nuclear device, or in one or more separately drilled "satellite" holes adjacent to the emplacement hole, will be crushed by over-pressure and shortened as the shock wave expands. (The shock wave causes the surrounding rock to behave like a fluid - hence the term "hydrodynamic".) A measuring instrument connected to the cable registers the rate at which the cable is short-circuited during the milliseconds it takes for the wave to reach the surface. The larger the explosion, the faster the wave travels; an analysis of the wave expansion allows an estimation of the yield.¹³ The CORRTX technique is known to be most efficient when applied to large explosions. Low-yield explosions may produce too small a crush zone for accurate measurement.

¹² 'US seeks "intrusive" atom-test inspections', *Washington Post*, 10 March 1988.

¹³ US Department of Energy, Nevada Operations Office, CORRTX, Los Alamos, Los Alamos National Laboratory, New Mexico, April 1986.

While the United States insisted that the CORRTEx technique was necessary, and that it would not be so intrusive as to reveal weapon design aspects that the testing State desired to keep secret, the Soviet Union maintained that remote monitoring by seismological means was sufficient. To find a mutually acceptable technology for checking compliance with the yield limitation, the Parties agreed, on 31 May 1988, to conduct a joint verification experiment (JVE). Following the JVE Agreement,¹⁴ on 17 August 1988, a US nuclear explosion was conducted at the Nevada test site in the presence of Soviet scientists and, on 14 September of the same year, a Soviet explosion was conducted at the Semipalatinsk test site, in Central Asia, in the presence of US scientists. Since the JVE was intended to demonstrate the ability of the Parties to determine whether a given nuclear explosion had exceeded the 150-kiloton threshold, it was agreed that the planned yield of the experimental explosion at each test site should approach that limit, and that each side should have the opportunity to measure, on the basis of reciprocity, the yield of the explosion conducted at the other Party's test site using both teleseismic methods and hydrodynamic methods. To facilitate teleseismic measurement, the Parties exchanged data on five explosions conducted prior to the JVE (between 1978 and 1988), indicating the yield, date and time, geographic co-ordinates, depth of burial and associated geological and geophysical data, along with the relevant seismic records. This exchange of information was equivalent to that called for in the original Protocol to the TTBT.¹⁵

The JVE tests were carried out several hundred metres below the surface. In each explosion the yield was measured by the other side as provided for in the JVE Agreement. For seismological measurement five seismological stations were used, and for hydrodynamic measurement cables were put in the nuclear device emplacement hole as well as in a satellite hole. A full collection of data was duly exchanged by the Parties. According to certain press reports, the CORRTEx technique of on-site measuring of the yields of explosions did not prove significantly superior to the seismic measuring technique.¹⁶ The data from the JVE were not made public after the termination of the experiment,¹⁷ but it later became known that in the case of the US test there was a great discrepancy between the results obtained from the two methods of measurement.¹⁸ Nevertheless, both sides found the JVE to be a useful exercise that helped elaborate supplementary verification procedures for the test-limitation treaties. Moreover, owing to the opening up of sensitive US and Soviet facilities to outsiders and the exchange of information previously considered as highly classified, the JVE became an important confidence-building measure.

¹⁴ For the text of the JVE Agreement, see *SIPRI Yearbook 1989*, pages 61-63, Oxford University Press, 1989.

¹⁵ Robinson, C. P., "The Joint Verification Experiment: A Unique Approach to Developing Verification Agreements", in *Disarmament* (A periodic review by the United Nations), Vol. XII, No. 2, summer 1989.

¹⁶ "Atomic test data weaken US view", *New York Times*, 11 September 1988.

¹⁷ "US Opposes Release of Soviet Nuclear Test Data", *New York Times*, 23 March 1989.

¹⁸ "Verifying Testing Treaties - Old and New", in *Arms Control Today*, July/August 1990.

The JVE - a government-to-government arrangement - was preceded by a joint seismic project conducted by the Soviet Academy of Sciences and the Natural Resources Defence Council (NRDC), a private US environmental protection organization. US scientists were allowed to operate seismic monitoring stations in the vicinity of the Semipalatinsk test site, while Soviet scientists were allowed to place seismic recording equipment around the Nevada test site. Both teams were able, among other things, to confirm that the bed-rock of the Soviet test site is considerably harder than that of the Nevada test site - an important finding in view of US suspicions that some Soviet tests had exceeded the 150-kiloton threshold. (See below under Compliance.) The scientists have also concluded that it is possible to detect and identify very low-yield explosions, and that "decoupled" explosions - that is, those conducted in large underground cavities (to elude verification) - can be detected with high-frequency registering equipment, or with regular equipment located near the test site.¹⁹ However, this US-Soviet non-governmental project was concerned with the feasibility of verifying compliance with a future agreement for a complete cessation of nuclear explosions rather than with the existing treaties limiting the yields of explosions.

A similar project, the British Seismic Verification Research Project (BSVRP), in which British seismic stations were set up in the Soviet Union to monitor Soviet tests, was carried out by some non-governmental British experts and the Soviet Academy of Sciences.²⁰

THE 1990 PROTOCOL TO THE TTBT

The verification experiments, as described above, helped to accelerate progress in the US-Soviet Nuclear Testing Talks. In the course of the 1989 ministerial meeting at Jackson Hole (Wyoming), the United States and the Soviet Union agreed on the routine use of both on-site hydrodynamic measurement of the explosion yield and in-country seismic monitoring. This compromise led to the signing of the 1990 Protocol to the TTBT, which replaced the original 1974 Protocol.

In addition to hydrodynamic measurement and seismic monitoring, the new Protocol provides for on-site inspection that includes taking samples of geological materials to confirm the geological and geophysical data provided by the testing Party. The personnel carrying out the inspection will also be allowed to look at the conditions of the nuclear charge emplacement to ensure that techniques to muffle seismic signals from nuclear explosions are not being resorted to. (Section VII of the 1990 Protocol to the TTBT.)

Seismic monitoring allows using three designated seismic stations within the testing Party's territory. (Establishment of a test site outside the national territory is forbidden.) The designated stations are: in the United States - Tulsa in Oklahoma,

¹⁹ See footnote 11 above.

²⁰ British Seismic Verification Research Project, *Press Release*, 9 August 1988.

Black Hills in South Dakota, and Newport in Washington; in the Soviet Union - Arti, Novosibirsk and Obninsk. A Party may replace one or more of its designated stations, provided that the new station meets the criteria agreed for the original ones. During a test, the personnel of the verifying Party may be present at the designated seismic stations to carry out seismic measurement. It must arrive at least 10 days before the test, and leave within two days after the test. (Section VI of the 1990 Protocol to the TTBT.) In an exchange of letters that preceded the signing of the 1990 Protocol, each side identified the conditions and technical requirements for the installation and operation of its seismic equipment at the designated seismic stations of the other side. The testing Party is prohibited from interfering with the installation, calibration, adjustment or operation of the verifying Party's equipment, and is obligated to provide agreed-upon assistance and logistical support.

The procedures, conditions, obligations and rights of the Parties that are applicable when the verifying Party decides to use the method of hydrodynamic yield measurement are described in great detail. (Section V of the 1990 Protocol to the TTBT.) In particular, in the event of a test having a "non-standard" vertical or horizontal configuration (that is, when any emplacement hole has a non-standard dimension and does not satisfy certain other specified conditions), and when the planned yield of the test exceeds 50 kilotons, the verifying Party is entitled to up to three satellite holes for each emplacement hole rather than one as in the case of a test of standard configuration. The verifying Party may also ask for a "reference test". This is a particular test of standard configuration, with respect to which the hydrodynamic yield measurement is used for the purpose of establishing a basis of comparison for the seismic measurement of that test and the planned test of non-standard configuration.

If the planned yield of a test exceeds 35 kilotons but does not exceed 50 kilotons, the verifying Party has the right to on-site inspection. If the planned yield of a test exceeds 50 kilotons, the verifying Party has the right to use the hydrodynamic yield measurement method, the seismic yield measurement method, or both, with respect to each explosion in the test. If, with respect to a test having a planned yield exceeding 50 kilotons, the verifying Party chooses not to use the hydrodynamic measurement, it may carry out on-site inspection, seismic measurement, or both. If, in each of the first five years of the operation of the TTBT, a Party does not carry out at least two tests having a planned yield exceeding 50 kilotons, the other Party may use hydrodynamic yield measurement on up to two tests with a planned yield below 50 kilotons, that is below the "trigger" level required for such measurement. The two tests would be selected by the testing Party from among those having the highest planned yields in a given year. In subsequent years, a similar procedure would apply to one test. Conducting a test with a planned yield exceeding 35 kilotons in a cavity having a volume of more than 20,000 cubic metres is prohibited, unless the Parties agree on new verification measures for that test. Extensive exchange of information is envisaged with respect to each test subject to verification. (Section III and V of the 1990 Protocol to the TTBT.)

The individuals engaged in verification activities in the territory of the testing Party are called "designated personnel", whereas those providing transportation to and from the point of entry (Washington and Travis Air Base in the United States, and Moscow and Leningrad in the Soviet Union) for designated personnel, their baggage, and the equipment of the verifying Party are called "transport personnel". They must all be nationals of the verifying Party, drawn from the lists of individuals accepted by the testing Party. While in the territory of the testing Party, the designated personnel and transport personnel are to be provided the equivalent of diplomatic privileges and immunities. These privileges and immunities extend to the living and working quarters of the personnel, including their documents and correspondence, as well as their aircraft and transport vehicles. Designated personnel are prohibited from interfering with the activities of the testing Party; the latter carries full responsibility for the preparation and conduct of a test.

The testing Party has a right to an initial familiarization inspection of all the equipment that the verifying Party will use in its verification activities. Within 45 days following the receipt of the equipment, the testing Party must either approve it, or specify the characteristics of any component that it deems inconsistent with the requirements of non-intrusiveness and safety. Equipment that is unacceptable for those reasons may be modified and resubmitted for approval. The verifying Party has the option of delivering either one or two sets of most equipment, but it must deliver two sets of sensing elements, cables, recording facilities and some other specified equipment. When the verifying Party provides two sets of identical equipment, the testing Party may select one for use by the personnel of the verifying Party and inspect the other. The testing Party also has the right to inspect the equipment provided in one set, and to do so without personnel of the verifying Party being present; it is then obliged to ship the equipment undamaged to the test site prior to prescribed deadlines. After the equipment has been used, the testing Party has the right to inspect it again. (Section VIII of the 1990 Protocol to the TTBT.)

Upon completion of the verification activities related to a specific test, the designated personnel team leader at the test site or at each designated seismic station must prepare a written report in the language of each Party. The report must list the activities carried out by designated personnel, as well as information, data, photographs and samples obtained. It should also list the technical and logistical activities carried out by the testing Party in support of the activities related to verification. The designated personnel team leader is required to include in the report his comments on any ambiguities which have not been resolved, to which the representative of the testing Party may respond. The report must be completed prior to the scheduled departure of designated personnel from the test site or the designated seismic station. Public release of the results of observation or measurements made by designated personnel may take place only with the agreement of both Parties. (Sections XI and XII of the 1990 Protocol to the TTBT.)

Every June, the Parties are to inform each other of the number of tests covered by the Protocol that they plan to conduct in the following calendar year. No less than

200 days before a planned test subject to monitoring, the testing Party must provide information on the date, location and configuration of the test, and whether the planned yield exceeds 35 or 50 kilotons. Within 20 days of receipt of such information, the verifying Party must inform the testing Party whether and, if so, which type of verification methods it intends to use: hydrodynamic, seismic or on-site inspection. Two days prior to the test, the testing Party must notify the verifying Party of the precise planned time of detonation, and within three days following the test of the actual time to the nearest 0.1 second. Notifications and other relevant information are to be transmitted through the Nuclear Risk Reduction Centers established by the 15 September 1987 Agreement between the United States and the Soviet Union. (Section IV of the 1990 Protocol to the TTBT.)

The verifying Party has to bear the costs of its verification activities, including the cost of specified goods provided to it, and the cost of refuelling and servicing its aircraft. The testing Party is responsible for all costs related to the preparation of test sites, designated seismic stations and storage facilities used by designated personnel. The testing Party is also responsible for the costs of conducting a reference test and of drilling or excavating the second and third satellite holes that may be requested by the verifying Party for a test of non-standard configuration with a planned yield exceeding 50 kilotons. In addition, the testing Party is responsible for the cost of transporting equipment to and from the sites where it chooses to inspect or familiarize itself with such equipment after its arrival at the point of entry, and the costs of transporting the equipment to and from a storage site. If the verifying Party notifies the testing Party of its intention not to go through with previously notified verification activities, it must reimburse the latter for any technical and logistical support costs incurred.

A Bilateral Consultative Commission (BCC) will meet at the request of either Party to discuss questions relating to the implementation of, or compliance with, the TTBT or its Protocol, as well as possible amendments to either of these documents. The BCC also has the authority to consider the implications of new verification technologies having a bearing on the TTBT, and to seek agreement on verification costs and payment procedures. A Co-ordinating Group of the BCC is to be set up for each test to co-ordinate the activities of the verifying Party with those of the testing Party. (Section XI of the 1990 Protocol to the TTBT.)

COMPLIANCE

After the signing of the TTBT in 1974, press reports began to appear in the United States accusing the Soviet Union of conducting nuclear tests with a yield in excess of the 150-kiloton threshold. But it was only in 1984 that this accusation was included in the official US list of complaints of Soviet non-compliance with arms control treaties,²¹ to be reiterated in subsequent years. The US Government admitted,

²¹ US Information Service, Document Foreign Policy EUR-114, 23 January 1984.

however, that the evidence gathered on alleged Soviet violations was ambiguous, and that no definitive conclusion could be reached. The Soviet Union countered with similar allegations about US tests, but did not elaborate on them.²²

Suspicions of breaches may have arisen because predicting the exact yield of nuclear explosions is associated with technical uncertainties. This was recognized by the Parties themselves when, upon concluding the TTBT, they reached an understanding that one or two "slight, unintended" breaches per year would not be considered a violation, but would be the subject of consultations at the request of either Party.²³ (This understanding remains valid even after the signing of the 1990 Protocol.) Moreover, the exchange of data, which was to be carried out simultaneously with the exchange of the instruments of ratification of the TTBT and complemented with calibration tests to improve each side's assessments of the yields of explosions, had been held up pending ratification of the Treaty. The Parties had certainly not afforded each other the opportunity to "familiarize" themselves with these data (as contemplated in paragraph 2 of the 1974 Protocol to the TTBT) before the exchange of instruments of ratification.

As suggested by US experts' reports of recent years, it may have been precisely the lack of information about the geological features of the Soviet nuclear test sites that led to ambiguous evidence of non-compliance. Soviet tests were measured as if they had been conducted at the geologically young Nevada test site, where the hot and possibly molten rock absorbs a large proportion of seismic energy, whereas the Soviet site in Eastern Kazakhstan is a geologically old and stable area, where the cold and solid rock transmits seismic energy considerably better. Consequently, the shock waves from Soviet explosions are registered as being stronger than those from US explosions. In 1988, the US Congressional Office of Technology Assessment (OTA) stated that extensive statistical studies of estimated yields of explosions at Soviet test sites had concluded that "the Soviets are observing a yield limit consistent with compliance with the 150-kiloton limit of the Threshold Test Ban Treaty".²⁴

In addition to limiting the size of underground nuclear weapon tests, each Party to the TTBT committed itself to limiting the number of such tests to a minimum. (Article I, 2.) However, this commitment has proved unverifiable because the term "minimum" lends itself to different interpretations. For example, some officials in the United States argued that the concept of minimum testing did not imply a reduction in the number of tests, and that the relevant treaty provision reflected only an intention to keep the test programme down to minimum national security needs. In fact, during the first 10 years that followed the signing of the TTBT, the rate of US testing diminished, whereas the rate of Soviet testing increased -to decline sharply in subsequent years. In 1989, the number of nuclear explosions conducted by the United

²² *Pravda*, 30 January 1984.

²³ *Arms Control and Disarmament Agreements: Texts and Histories of Negotiations*, 1982 edition, US Arms Control and Disarmament Agency.

²⁴ US Congress, Office of Technology Assessment, *Seismic Verification of Nuclear Testing Treaties* (OTA-ISC-361), US Government Printing Office, Washington, DC, May 1988, p. 19.

States and the Soviet Union reached the lowest annual level since the signing of the TTBT (11 and 7 respectively), not counting the Soviet moratorium on testing in 1985-86.²⁵ Even further lowering of the frequency of nuclear explosions can be expected, at least on the Soviet side. Yielding to pressure from anti-nuclear groups, the Soviet Union plans to close its principal test site at Semipalatinsk and move its testing activities to Novaya Zemlya, an island in the Barents Sea, where, since 1963, nuclear tests have been conducted only sporadically. The harsh climatic conditions of the Arctic region will unavoidably bring about the scaling back of the Soviet test programme.²⁶ In recent years, the number of tests carried out each year - though not their specific purpose or exact yields - has been made public by the testing States themselves. To date, the figures have not been formally contested.

IV - The Peaceful Nuclear Explosions Treaty (PNET)

BASIC OBLIGATIONS

To ensure that underground explosions declared to be for peaceful purposes do not provide weapons-related benefits not obtainable from limited weapons testing, the United States and the Soviet Union established, in the PNET, the same yield threshold for peaceful application explosions as had been imposed on weapon tests under the TTBT, namely, 150 kilotons (Article III, 2 (a)).²⁷ The yield restriction applies to individual explosions as distinct from group explosions, which are governed by different rules. The possibility of carrying out individual explosions with a yield greater than 150 kilotons has been left open for future consideration "at an appropriate time to be agreed" (Article III, 3).

A "group explosion" is defined as two or more individual explosions for which "the time interval between successive individual explosions does not exceed five seconds and for which the emplacement points of all explosives can be interconnected by straight line segments, each of which joins two emplacement points and each of which does not exceed 40 kilometres" (Article II (c)). A group explosion may exceed the 150-kiloton limit and reach an aggregate yield as high as 1500 kilotons (1.5 megatons) only if it is carried out in such a way that individual explosions in the group can be identified and their individual yields determined to be no more than 150 kilotons. All explosions allowed under the PNET must be consistent with the PTBT which bans explosions causing radioactive debris to be present outside the territorial limits of the State conducting them (Article III, 2 (d)).

The Agreed Statement accompanying the PNET specifies that development testing of nuclear explosives is not considered a "peaceful application". Such testing would

²⁵ Ferm, R., "Nuclear explosions", in *SIPRI Yearbook 1990*, Oxford University Press, 1990.

²⁶ *International Herald Tribune*, 12 March 1990.

²⁷ In addition, a minimum depth requirement was imposed on the explosive emplacement in order to minimize information useful for the military on blast and electromagnetic effects produced by the explosion.

have to be carried out only within the boundaries of a nuclear weapon test site and would be treated as the testing of a nuclear weapon, even if it were intended to develop a device for subsequent peaceful application. Moreover, if test facilities, instrumentation or procedures related only to the testing of nuclear weapons or if their effects were associated with an explosion carried out under the terms of the PNET, such an explosion would not constitute a "peaceful" application. The Agreed Statement implies that proof would have to be given that the explosion outside a weapon test site was being conducted with a view to serving some practical civil ends.

The PNET also applies to US and Soviet explosions that might be conducted on the territories of third States (Article VII) in conformity with the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). This means that, irrespective of the special international agreement or agreements envisaged for such explosions under the NPT, and unless the explosion services are provided by a nuclear power other than the United States and the Soviet Union, the yield limits, as well as other provisions of the PNET, would have to be observed.

PROCEDURES AND METHODS OF VERIFICATION AS ORIGINALLY AGREED

As in the case of the TTBT, the Parties to the PNET may use national technical means of verification to check compliance with its provisions (Article IV, 1 (a)). In the Protocol signed in 1976 the United States and the Soviet Union undertook to supply each other with information that would include, among other things: the purpose, the location (expressed in geographical co-ordinates) and the planned date of the explosion; the number of explosives, the planned yield of each explosive and its location relative to other explosives in a group (with a precision of 100 or less metres); the depth of emplacement of each explosive (with a precision of one metre), as well as the time intervals between individual explosions in a group explosion (with a precision of one-tenth second); a description of specific technological features of the project of which the explosion is a part; and a description of the geological and geophysical characteristics of the site of each explosion which could influence determination of yield. The amount of information which each Party was to provide varied according to yields.

For each explosion, the Party conducting it would inform the other Party, not later than two days before the explosion, of the planned time of detonation of each explosive. Not later than 90 days after each explosion, the Party which had conducted it would supply the other Party with information about the actual time of the explosion and its aggregate yield, as well as confirmation of other data provided before the explosion, including an explanation of any changes or corrections based on the results of the explosion. (Article II of the 1976 Protocol to the PNET.)

Since it is difficult to determine with distant seismic measuring instruments the yield of individual explosions occurring within a few seconds of each other, a group explosion having an aggregate yield above 150 kilotons could conceal an individual blast exceeding the threshold limit. To prevent this from taking place, the 1976

Protocol stipulated that designated personnel of the verifying Party were to be given access to the site of the explosion in order to check that the local circumstances, including facilities and installations associated with the project, were consistent with the stated peaceful purposes; to examine the validity of the geological and geophysical information provided by the Party conducting the explosion; to observe the emplacement of each explosive; to observe the area of the entrance to each emplacement hole from the time of emplacement of each explosive until all personnel had been withdrawn from the site for the detonation of the explosion; and, finally, to observe the explosion. (Article III of the 1976 Protocol to the PNET.) However, designated personnel would not have access by physical, visual or technical means to the interior of the canister containing an explosive, to documentary or other information descriptive of the design of an explosive nor to equipment for control and firing of explosives.

The main function of the designated personnel would be to measure the yield of each individual explosion in the group with the use of special equipment. For a group explosion with a planned aggregate yield exceeding 150 kilotons, determination of the yield of each individual explosion would be based on hydrodynamic measurements. If the verifying side chose to use its own equipment rather than that provided by the Party carrying out the explosion, an elaborate procedure would be followed to ensure that there was no abuse and that the verifying Party had not acquired unwarranted information.

The 1976 Protocol further provided that for any group explosion with a planned aggregate yield exceeding 500 kilotons, the verifying Party might, in addition to the measures described above, emplace, install and operate (under the observation and, if necessary, with the assistance of the verified Party) a local seismic network to help identify the number of individual explosions in the group, and ascertain that no undeclared explosions were taking place along with the announced ones. The network would be established at agreed sites and would start operating not later than 20 days before the beginning of emplacement of the explosives and continue operating not later than three days after the explosion unless otherwise agreed between the Parties. Radio links could be used for transmission of data between the seismic stations and the control centre. On-site observation was also envisaged for some explosions with a planned aggregate yield of between 100 and 150 kilotons, when, owing to the special character of the project, the reliability of teleseismic measurement could not be ensured. This would not be mandatory, as with explosions exceeding 150 kilotons; the need would have to be mutually agreed between the Parties. The 1976 Protocol also contained provisions regulating the number of designated personnel, the geographical extent of their access, the duration of their stay in the areas concerned and their equipment. The expenses incurred for the transportation of designated personnel and of their equipment to and from the site of the explosion, for telecommunications, living and working quarters, as well as for subsistence, and all other personal expenses would be the responsibility of the Party other than the Party carrying out the explosion. (Article II-VII of the 1976 Protocol to the PNET.)

To facilitate consultations with each other, as well as the making of inquiries and furnishing information in response to the inquiries, the United States and the Soviet Union decided to establish a Joint Consultative Commission (JCC). Within the framework of this Commission, the Parties could also consider questions concerning compliance with the assumed obligations and situations deemed to be ambiguous; questions involving unintended interference with the means of verification; changes in technology or other new circumstances having a bearing on the provisions of the Treaty; and possible amendments to the Treaty. (Articles V and VI of the PNET and Article X of the 1976 Protocol to the PNET.)

THE 1990 PROTOCOL TO THE PNET

The Protocol to the PNET, signed on 1 June 1990 by the United States and the Soviet Union simultaneously with the Protocol to the TTBT, has replaced the 1976 Protocol to the PNET. The new document has expanded and strengthened the procedures and methods of verification originally agreed upon, but to a considerably lesser extent than has been the case with the Protocol to the TTBT. Indeed, as distinct from the TTBT and its 1974 Protocol, the PNET and its 1976 Protocol already provided for on-site observation in addition to seismic monitoring, as well as for hydrodynamic measurement of certain types of explosions, though not for on-site inspections which are now envisaged for both treaties. The provisions of the two new Protocols are now similar, and in many instances even identical. The most important features of the 1990 Protocol to the PNET are as follows.

The verifying Party is now accorded the right to use the hydrodynamic method to measure the yield of any explosion having a planned yield exceeding 50 kilotons and to measure separately the yield of any individual explosion that is part of a group explosion having a planned aggregate yield exceeding 50 kilotons. If the verifying Party uses the hydrodynamic yield measurement method, it also has the right to use a temporarily deployed local seismic network to identify each individual explosion in any group explosion having a planned aggregate yield exceeding 150 kilotons. The verifying Party also has the right to carry out on-site inspection with respect to any single or group explosion having a planned yield (or planned aggregate yield) exceeding 35 kilotons. However, it does not have the right to on-site inspection with respect to an explosion having a planned yield exceeding 50 kilotons if it chooses to use the hydrodynamic yield measurement method for that explosion. (Section III of the 1990 Protocol to the PNET.) Unlike the 1990 Protocol to the TTBT, the 1990 Protocol to the PNET does not envisage the use of satellite holes for hydrodynamic measurement; the measuring equipment is to be placed in the same emplacement hole as that in which the explosive is located. (Section V of the 1990 Protocol to the PNET.) Nor does it make a distinction between standard and non-standard configuration of tests.

By 1 July of a given year, each Party must inform the other Party whether or not it intends to conduct, during the following calendar year, explosions having a planned

yield (or planned aggregate yield) exceeding 35 kilotons and, if so, how many. The Party conducting the explosion is required, at least 180 days prior to the planned date of the beginning of emplacement of the explosive or explosives for every explosion having a planned yield (or planned aggregate yield) exceeding 35 kilotons, to notify the verifying Party of its intention to carry out the explosion. It must then also provide the verifying Party with all relevant information. Following receipt of such information, and no less than 150 days prior to the planned emplacement date, the verifying Party must indicate, in a notification, whether or not it intends to exercise its on-site inspection rights or its hydrodynamic yield measurement rights. (Section IV of the 1990 Protocol to the PNET.)

As in the case of the TTBT, all notifications and other relevant information are to be transmitted through the Nuclear Risk Reduction Centers. The JCC established by the PNET may be used by the Parties to facilitate the implementation of the 1990 Protocol. In addition, for each explosion for which verification activities under the Protocol are to be carried out, a Co-ordinating Group is to be established under the auspices of the JCC. (Section XI of the 1990 Protocol to the PNET.)

COMPLIANCE

The PNET envisages US-Soviet co-operation, on the basis of reciprocity, in areas related to underground nuclear explosions for peaceful purposes (Article VI, paragraph 1). But this clause was already a dead letter at the time of signing. In the mid-1970s, after some several dozen tests, the United States terminated its peaceful nuclear explosions programme because it had found it impossible to establish applications which would be technically feasible, economically viable and publicly acceptable. The so-called Plowshare programme then disappeared from the US federal budget. The Soviet Union, however, pursued its programme of peaceful nuclear explosions. So far, it has conducted over 100 explosions outside its known weapon test sites, reportedly for earth-moving experiments, formation of cavities in salt for underground storage of gas condensates, gas stimulation, control of runaway oil wells, and possibly also for mapping the geological structure at depth.²⁸ Nevertheless, after the conclusion of the PNET, the Soviet Government declared that it was prepared to suspend nuclear explosions for peaceful purposes, or even forgo them altogether if a treaty were concluded prohibiting nuclear explosions in all environments. In the past few years, the Soviet Union has been phasing out nuclear explosions for non-military purposes; in 1989 and during the first nine months of 1990 it did not conduct any such explosion.

No complaints have been made regarding compliance with the PNET. Soviet peaceful nuclear explosions have not been observed by US personnel; none seems to have been in the category of explosions for which the 1976 Protocol to the PNET

²⁸ Borg, Iris, Y. P., "Nuclear explosions for peaceful purposes", in Goldblat, J. and Cox, D. (eds.), *Nuclear Weapon Tests: Prohibition or Limitation?*, Oxford University Press, 1988.

required observation. Besides, during more than a decade after the Treaty's signature, it would have been difficult to initiate an intrusive observation procedure on the basis of an unratified agreement. Nonetheless, acceptance, as early as 1976, of the obligation to submit certain categories of peaceful nuclear explosions to on-site observation carried political significance. Although it was clear that occasions for inviting observers might present themselves very rarely, this breakthrough in the great powers' approach, especially that of the Soviet Union, was noteworthy as a precedent for future arms control measures. Indeed, the revised Soviet draft treaty on the "complete and general prohibition of nuclear weapon tests" submitted to the UN General Assembly in November 1976 - that is, only a few months after the signing of the PNET - provided for on-site inspection;²⁹ the right to conduct such inspection has been subsequently included in all the test ban proposals discussed in later years.

V - Conclusions

There can be hardly any doubt that the existing verification procedures are sufficient to detect substantial violations of the test-limitation treaties. Sporadic breaches are, of course, always possible; some have actually been recorded. Each Party has the right to withdraw from the Treaty if some extraordinary event has jeopardized its supreme interests. It is entitled to decide for itself whether such an event has occurred and does not need to justify its action to any external authority. However, none of the alleged infractions was considered serious enough to justify withdrawal. Indeed, considering the low arms control value of the agreed limitations, national security of the Parties could not have been affected.

As regards the PTBT, concealment of an explosion in the prohibited environments would be extremely difficult, expensive and risky. If a nuclear weapon State decided that it needed testing in any of these environments, it would probably resort to the escape clause mentioned above rather than embark on secret explosions. If an emergent nuclear weapon State wanted to demonstrate through an explosion that it had acquired nuclear weapon capability, it would presumably also prefer to denounce the Treaty and act openly rather than clandestinely. If, nevertheless, a violation of the PTBT did occur and were detected outside the national territories of the Parties - in outer space or over the high seas - it could be difficult, and perhaps even impossible, to identify the violator.

As regards the TTBT, the likelihood that the Parties would deliberately exceed the high yield threshold of 150 kilotons, in violation of the Treaty, is rather low. The growing accuracy of the nuclear weapons delivery vehicles has diminished the need for very powerful nuclear warheads. Setting off a few clandestine detonations of a somewhat higher yield than that prescribed by the TTBT could hardly bring any military advantage to the violator. In any event, the 1974 Protocol to the TTBT was already strict and detailed enough to deter breaches. New provisions were not

²⁹ UN document A/C 1/31/9.

indispensable, but the 1990 Protocol, with its built-in verification redundancies, may have helped remove some residual doubts about the verifiability of the TTBT. It has also confirmed the willingness of the United States and the Soviet Union to engage in far-reaching co-operative verification measures.

As regards the PNET, it is clear that peaceful nuclear explosions with yields similar to those set in the TTBT cannot produce militarily significant information which is not obtainable through weapon tests permitted by the TTBT. Consequently, the nuclear weapon powers can have no incentive to seek such information through explosions regulated by the PNET. The extremely elaborate (and costly) methods of verification, as spelled out in the PNET and the Protocol to it, therefore appear superfluous. They may never be resorted to.

The nuclear test-limitation treaties are often described as transitional measures that may facilitate the achievement of a satisfactorily verifiable, multilateral, comprehensive test ban treaty (CTBT) - the goal sought by the majority of the international community. However, the PTBT contains no verification provisions, whereas the verification clauses of the TTBT and the PNET are geared to bilateral US-Soviet relations and are not applicable to a CTBT.

Under yield-limitation treaties, the Parties are interested primarily in checking whether the threshold for weapon tests has not been exceeded. This can be done by seismic means on the basis of validated geological and geophysical information exchanged between the Parties, by on-site inspection of the testing site and by on-site measuring of the yield of the explosion. Under a CTBT, any detonation of a nuclear device would violate the treaty, irrespective of its size. Clandestine explosions could occur outside the known testing sites - that is, in places for which no information is available. On-the-spot verification, if found necessary to check the accuracy of seismic recordings, would mean inspecting the area of a suspected event instead of observing an explosion at a time and place indicated by the testing country as in the case of yield-limitation treaties. The functions of inspectors searching for evidence of violation would differ substantially from the tasks of those measuring the yield of declared explosions. In other words, the procedures and methods of verification established for the TTBT and PNET would have no bearing on States' ability to guard against violations of a CTBT.

Cheating under a CTBT would allow a Party to engage in nuclear weapon development at the expense of rival nations complying with the ban, and/or - in the case of a nuclear weapon Power - to rectify some previously unsuspected serious faults in its weapon stockpile without abrogating its treaty obligations. It could thus cause greater harm to the cheated country than a violation of a treaty which only limits the yield or the number of test explosions. A CTBT would therefore require verification procedures even more reliable than the TTBT or the PNET. Moreover, since it would be a multilateral treaty, special international verification machinery would have to be established.

Verification of compliance is, of course, only one of several criteria that are normally taken into account by Governments in deciding whether an arms control

treaty should be concluded. Political and strategic interests are of overriding importance. This applies also to a CTBT, insofar as at least three nuclear weapon Powers - the United States, the United Kingdom and France - consider testing to be essential in maintaining the credibility of nuclear deterrence upon which they apparently base their security. Thus, even if foolproof guarantees of compliance could be devised, a CTBT would not be achieved without some drastic modifications in current military doctrines of the nuclear weapon Powers.

Annexes

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Table 1: Procedures related to the Nuclear Test-Limitation Treaties
Main Treaty Provisions and Monitoring and Verification Methods

	Factfinding							Assessment procedures					
	0	1	2	3	4	5	6	7	8	9	10	11	12
Establishment of data base													
Limitation of use													
Limitation of deployment													
Limitation of testing													
Limitation of possession													
Limitation of production													
Limitation of transfer													
Prohibition of use													
Prohibition of deployment													
Prohibition of testing													
Prohibition of possession													
Prohibition of production													
Prohibition of transfer													
Destruction													

0 = No method; 1 = National Technical Means; 2 = Exchange of data; 3 = Consultation; 4 = Control Posts/Observation; 5 = On-site inspection on a State territory; 6 = On-site inspection on a non-State territory; 7 = IAEA Safeguards; 8 = Review Conference; 9 = Submission of report; 10 = Consultation; 11 = Referral to an international organization; 12 = Referral to the International Court of Justice.

For further explanation see also pages 118 and 32-34.

Explanatory note on Table 1

The Partial Test Ban Treaty of 1963 limits the testing of nuclear weapons or any other nuclear explosive in certain environments, or when causing certain effects (Article I).

The Treaty does not contain any verification provisions.

The Threshold Test Ban Treaty of 1974 and the Peaceful Nuclear Explosions Treaty of 1976 establish a limit on the explosive yield of underground explosions (Article I (TTBT) and Article I and III (PNET))

Factfinding methods

Both treaties provide for the use of National Technical Means, the exchange of information and consultation (Article II (TTBT) and Article IV (PNET)). The PNET also provides for the establishment of a Joint Consultative Commission to facilitate consultations and to conduct observations. The Protocols signed in 1990 provide for hitherto unforeseen on-site inspections and for observation posts. Methods of consultation and exchange of data are also strengthened in the 1990 Protocols.

Assessment procedures

The TTBT and PNET Protocols provide for Consultations and for the submission of a report.

The Relevant Treaty Articles

TREATY BANNING NUCLEAR WEAPON TESTS IN THE ATMOSPHERE, IN OUTER SPACE AND UNDER WATER (5 AUGUST 1963, MOSCOW)

ARTICLE I

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

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

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

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

ARTICLE IV

(1) This treaty shall be of unlimited duration.

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

TREATY BETWEEN THE USA AND THE USSR ON THE LIMITATION OF UNDERGROUND NUCLEAR WEAPON TESTS (3 JULY 1974, MOSCOW)

ARTICLE I

1. Each Party undertakes to prohibit, to prevent, and not to carry out any underground nuclear weapon test having a yield exceeding 150 kilotons at any place under its jurisdiction or control, beginning 31 March 1976.

2. Each Party shall limit the number of its underground nuclear weapon tests to a minimum.

3. The Parties shall continue their negotiations with a view towards achieving a solution to the problem of the cessation of all underground nuclear weapon tests.

ARTICLE II

1. For the purpose of providing assurance of compliance with the provisions of this Treaty, each Party shall use national technical means of verification at its disposal in a manner consistent with the generally recognized principles of international law.

2. Each Party undertakes not to interfere with the national technical means of verification of the other Party operating in accordance with paragraph 1 of this Article.

3. To promote the objectives and implementation of the provisions of this Treaty the Parties shall, as necessary, consult with each other, make inquiries and furnish information in response to such inquiries.

TREATY BETWEEN THE USA AND THE USSR ON UNDERGROUND NUCLEAR EXPLOSIONS FOR PEACEFUL PURPOSES (28 MAY 1976, MOSCOW AND WASHINGTON)

ARTICLE I

1. The Parties enter into this Treaty to satisfy the obligation in Article III of the Treaty on the Limitation of Underground Nuclear Weapon Tests, and assume additional obligations in accordance with the provisions of this Treaty.

2. This Treaty shall govern all underground nuclear explosions for peaceful purposes conducted by the Parties after 31 March 1976.

ARTICLE III

1. Each Party, subject to the obligations assumed under this Treaty and other international agreements, reserves the right to:

(a) carry out explosions at any place under its jurisdiction or control outside the geographical boundaries of test sites specified under the provisions of the Treaty on the Limitation of Underground Nuclear Weapon Tests; and

(b) carry out, participate or assist in carrying out explosions in the territory of another State at the request of such other State.

2. Each Party undertakes to prohibit, to prevent and not to carry out at any place under its jurisdiction or control, and further undertakes not to carry out, participate or assist in carrying out anywhere:

(a) any individual explosion having a yield exceeding 150 kilotons;

(b) any group explosion:

(1) having an aggregate yield exceeding 150 kilotons except in ways that will permit identification of each individual explosion and determination of the yield of each individual explosion in the group in accordance with the provisions of Article IV of and the Protocol to this Treaty;

(2) having an aggregate yield exceeding one and one-half megatons;

(c) any explosion which does not carry out a peaceful application;

(d) any explosion except in compliance with the provisions of the Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water, the Treaty on Non-Proliferation of Nuclear Weapons, and other international agreements entered into by the Party.

3. The question of carrying out any individual explosion having a yield exceeding the yield specified in paragraph 2 (a) of this Article will be considered by Parties at an appropriate time to be agreed.

ARTICLE IV

1. For the purpose of providing assurance of compliance with the provisions of this Treaty, each Party shall:

(a) use national technical means of verification at its disposal in a manner consistent with generally recognized principles of international law; and

(b) provide to the other Party information and access to sites of explosions and furnish assistance in accordance with the provisions set forth in the Protocol to this Treaty.

2. Each Party undertakes not to interfere with the national technical means of verification of the other Party operating in accordance with paragraph 1 (a) of this Article, or with the implementation of the provisions of paragraph 1 (b) of this Article.

ARTICLE V

1. To promote the objectives and implementation of the provisions of this Treaty, the Parties shall establish promptly a Joint Consultative Commission within the framework of which they will:

(a) consult with each other, make inquiries and furnish information in response to such inquiries, to assure confidence in compliance with the obligations assumed;

(b) consider questions concerning compliance with the obligations assumed and related situations which may be considered ambiguous;

(c) consider questions involving unintended interference with the means for assuring compliance with the provisions of this Treaty;

(d) consider changes in technology or other new circumstances which have a bearing on the provisions of this Treaty; and

(e) consider possible amendments to provisions governing underground nuclear explosions for peaceful purposes.

2. The Parties through consultation shall establish, and may amend as appropriate, Regulations for the Joint Consultative Commission governing procedures, composition and other relevant matters.

List of Parties

Treaty Banning Nuclear Weapon Tests in the
Atmosphere, in Outer Space and under Water
(as of 31 July 1990)

Afghanistan	1964	Gambia	1965
Algeria	S	German Democratic Republic ¹	1963
Antigua and Barbuda	1988	Germany, Federal Republic of ¹	1964
Argentina	1986	Ghana	1963
Australia	1963	Greece	1963
Austria	1964	Guatemala	1964
Bahamas	1976	Guinea-Bissau	1976
Bangladesh	1985	Haiti	S
Belgium	1966	Honduras	1964
Benin	1964	Hungary	1963
Bhutan	1978	Iceland	1964
Bolivia	1965	India	1963
Botswana	1968	Indonesia	1964
Brazil	1964	Iran, Islamic Republic of	1964
Bulgaria	1963	Iraq	1964
Burkina Faso	S	Ireland	1963
Burundi	S	Israel	1964
Byelorussian Soviet Socialist Republic	1963	Italy	1964
Cameroon	S	Ivory Coast	1965
Canada	1964	Jamaica	S
Cape Verde	1979	Japan	1964
Central African Republic	1964	Jordan	1964
Chad	1965	Kenya	1965
Chile	1965	Korea, Republic of	1964
Colombia	1985	Kuwait	1965
Costa Rica	1967	Lao People's Democratic Republic	1965
Cyprus	1965	Lebanon	1965
Czechoslovakia	1963	Liberia	1964
Denmark	1964	Libyan Arab Jamahiriya	1968
Dominican Republic	1964	Luxembourg	1965
Ecuador	1964	Madagascar	1965
Egypt	1964	Malawi	1964
El Salvador	1964	Malaysia	1964
Equatorial Guinea	1989	Mali	S
Ethiopia	S	Malta	1964
Fiji	1972	Mauritania	1964
Finland	1964	Mauritius	1969
Gabon	1964	Mexico	1963
			...

...		Spain	1964
Mongolia	1963	Sri Lanka	1964
Morocco	1966	Sudan	1966
Myanmar	1963	Swaziland	1969
Nepal	1964	Sweden	1963
Netherlands	1964	Switzerland	1964
New Zealand	1963	Syrian Arab Republic	1964
Nicaragua	1965	Taiwan	1964
Niger	1964	Tanzania, United Republic of	1964
Nigeria	1967	Thailand	1963
Norway	1963	Togo	1964
Pakistan	1988	Tonga	1971
Panama	1966	Trinidad and Tobago	1964
Papua New Guinea	1980	Tunisia	1965
Paraguay	S	Turkey	1965
Peru	1964	Uganda	1964
Philippines	1965	Ukrainian Soviet Socialist Republic	1963
Poland	1963	Union of Soviet Socialist Republics	1963
Portugal	S	United Kingdom	1963
Romania	1963	United States of America	1963
Rwanda	1963	Uruguay	1969
Samoa	1965	Venezuela	1965
San Marino	1964	Yemen Arab Republic ²	S
Senegal	1964	Yemen, People's Democratic Republic of ²	1979
Seychelles	1985	Yugoslavia	1964
Sierra Leone	1964	Zaire	1965
Singapore	1968	Zambia	1965
Somalia	S		
South Africa	1963		

S means that the Treaty was signed, but no further action has been taken.

¹ In 1990 the two States merged forming Germany.

² In 1990 the two States merged forming the Republic of Yemen.

Chapter 4

The Outer Space and the Moon Treaties (1967, 1979)

Du Shuhua

I - Introduction

Many years of deliberations and negotiations for the peaceful use of outer space and the prohibition of outer space weapons have so far resulted in several multilateral treaties:

- Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and under Water (*Partial Test-Ban Treaty*) - signed on 5 August 1963 and entered into force on 10 October 1963.
- Treaty on Principles Governing the Activities of States in the Exploration of Outer Space, Including the Moon and Other Celestial Bodies (*Outer Space Treaty*) - signed on 27 January 1967 and entered into force on 10 October 1967.
- Convention on the Registration of Objects Launched into Outer Space (adopted by UNGA Res. 3235 (XXIX) of 12 November 1974) (*Registration Convention*) - opened for signature on 14 January 1975 and entered into force on 15 September 1976.
- Convention on the Prohibition of Military or any other Hostile Use of Environmental Modification Techniques (adopted by UNGA Res. 31/72 of 10 December 1976) (*ENMOD Convention*) - opened for signature on 18 May 1977 and entered into force on 5 October 1978.
- Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (adopted by UNGA Res. 34/68 of 5 December 1979) (*Moon Treaty*) - opened for signature on 18 December 1979 and entered into force on 11 July 1984.
- International Telecommunication Convention (adopted by the Plenipotentiary Conference of the ITU on 6 November 1982) - signed on 6 November 1982 and entered into force on 1 January 1984.

There are 119 signatories and Parties to the Outer Space Treaty as of 31 December 1989. The Moon Treaty has not been ratified by the main space Powers. The signatories and Parties to the Moon Treaty altogether number only 13 States.

This chapter reviews the basic obligations of the Parties under the existing Outer Space and Moon Treaties and is also concerned with the Registration Convention, the procedures and methods of verification envisaged in these treaties, as well as the proposals to improve their verification provisions.

II - Outer Space

Since the first launching of a satellite in 1957 the exploration and practical uses of space have developed rapidly. Due to both the benefits of peaceful use of outer space and latent dangers of an arms race in outer space, the utilization of that environment was, is and will be considered a most important issue. Where does outer space begin? There is no precise natural boundary between the atmosphere and outer space, and an artificial demarcation, which has been under consideration for a number of years, has not been agreed upon. The Outer Space Treaty, which laid down the basic rules for outer space, does not define the term. Here we will consider outer space in terms of the activities of States in outer space which can be subject to verification. Outer space as an instrument of verification - that is, the way outer space can be used to verify activities undertaken by States - is not our concern.

BASIC OBLIGATIONS AND SOME LOOPHOLES OF THE OUTER SPACE TREATY

The preamble of the Outer Space Treaty recognizes, in particular, "the common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes".¹ Articles I and III contain certain essential rules:

Article I:

The exploration and use of outer space . . . shall be carried out for the benefit and in the interests of all countries . . . on a basis of equality . . . and there shall be free access to all areas of celestial bodies . . . freedom of scientific investigation . . . and States shall encourage international co-operation in such investigation.

Article III:

States Parties to the Treaty shall carry on activities in the exploration and use of outer space . . . in the interest of maintaining international peace and security and promoting international co-operation and understanding.

Article IV of the Treaty defines the main restrictions on military activities in outer space:

States Parties to the Treaty undertake not to place in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner. The Moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively for peaceful purposes. The establishment of military bases, installations and

¹ *Status of Multilateral Arms Regulation and Disarmament Agreements*, Third edition 1987, United Nations, New York, 1988, pp. 32-45.

fortifications, the testing of any type of weapons and the conduct of military manoeuvres on celestial bodies shall be forbidden

From the point of view of arms control there are some obvious loopholes, so that an arms race in outer space has never been restricted. In fact, the present space armament competition is speeding up. These loopholes, in my opinion, are:

1. The 1967 Outer Space Treaty forbids "nuclear weapons" and other "weapons of mass destruction", but does not define them clearly. Other weapons are not prohibited.
2. Positioning the two expressions "to place" and "in orbit around the Earth" together, the Treaty implicitly allows "nuclear weapons" and other "weapons of mass destruction" to be permitted for use as long as they are not moving around the Earth in a circle. In other words, when the weapons systems do not migrate around the Earth in a complete circle, i.e. are not "in orbit around the Earth", then the Treaty does not forbid or limit them.
3. The Outer Space Treaty rules that the Moon and other celestial bodies shall be used "exclusively for peaceful purposes". The reasonable proposal that outer space, including the Moon and other celestial bodies, should be used exclusively for peaceful purposes was not adopted. This is a serious shortcoming of the Treaty. In my opinion, the meaning of "exclusively for peaceful purposes" is demilitarization. Although the 1967 Outer Space Treaty has demilitarized the Moon and other celestial bodies, outer space as a whole has only been partially demilitarized.
4. The Treaty accepts the expression "exploration and use of outer space for peaceful purposes" in the preamble and "exclusively for peaceful purposes" in Article 4 of the Treaty, but no definition of these expressions is given. What do they mean? "Peaceful purposes" could be the subject of lengthy debate. The Super Powers have interpreted the provisions of the Treaty for the peaceful application of space technology as meaning non-aggressive rather than non-military.

VERIFICATION PROVISIONS OF THE TREATY

The Outer Space Treaty actually has no verification provisions, and there are no descriptions of verification methods, measures or procedures. With regard to verification, Articles X and XII, which are known as verification provisions, only provide for some possibility of bilateral or multilateral inspection. Very briefly, the situation may be explained by the fact that for a time in the past it was considered both unnecessary and dangerous to institute international verification procedures. Dangerous, because to provide for more stringent measures could have been perceived as presenting a risk of intrusion into the activities of the Parties and would have been rejected, at least by some of them.

Article X of the Treaty encourages international co-operation in the exploration and use of outer space: "in conformity with the purposes of this Treaty, the States Parties to the Treaty shall consider on the basis of equality any requests by other States Parties to the Treaty to be afforded an opportunity to observe the flight of space objects launched by those States". Simultaneously, "the nature of such an opportunity for observation and the conditions under which it could be afforded shall be determined by agreement between the States concerned". Article XII states that "All stations, installations, equipment and space vehicles on the Moon and other celestial bodies shall be open to representatives of other States Parties to the Treaty on a basis of reciprocity".

Article IX provides the basis for co-operation between Parties founded on the respect of interests of all Parties, as well as on the necessity to preserve the environment of space and Earth. It stipulates: "A State Party to the Treaty which has reason to believe that an activity or experiment planned by another State Party in outer space . . . would cause potentially harmful interference with activities in the peaceful exploration and use . . . may request consultation concerning the activity or experiment".

It is worth mentioning two points: first, "harmful interference" is not defined by the Treaty; secondly, no obligation is placed on the State Party which was requested for consultation to reply to the request.

It is understood that all the States Parties which provide an opportunity to observe the flight of space objects ("all stations, installations, equipment and space vehicles") and adopt "consultation" do so only on the basis of "reciprocity" and "equality". States Parties assume no obligation to each other. Consequently, as central measures in the outer space arms control effort, the methods and procedures of verification laid down in the Outer Space Treaty are still far from adequate.

In practical terms, the verification provisions of the Outer Space Treaty are insufficient, incomplete and ineffective. They are not of a binding nature and are largely dependent on the good will of the Parties to the Treaty. That is the problem. Clearly, the reasons why the Treaty is so unsatisfactory are historical and technical.

ASSESSMENT OF THE TREATY PRACTICE AND SOME PROPOSALS TO IMPROVE THE VERIFICATION PROVISIONS

A treaty concerning weapon limitations in outer space must have the possibility of adequate verification. To solve the technical problems of verification it seems necessary to emphasize some kind of on-site inspection. Under this circumstance, co-operation between Parties to the treaty is needed.

In order to establish adequate confidence among all signatories it is important to exchange information on what action and measures are actually being taken by Parties. Increased communication of space activities among Parties would contribute to the stability of the world situation. Openness of activities in outer space therefore, would

be of great importance to the verification of complaints of violation of outer space disarmament measures.

It is clear that the prevention of an arms race in outer space is an extremely important problem for which a solution must be found. Outer space is the inheritance of mankind. It is necessary to do everything possible to prevent it from becoming weaponized or a battlefield for future military conflict.

It is very difficult, however, to achieve the above purpose at one stroke, *inter alia* because of the complex relationship among military space systems and also because of the difficulty of distinguishing civilian from military space technology. To achieve progress before it is too late, the quickest and best approach would be to try to solve the most urgent problem first - that is to prohibit space weapons.

The recent trend in multilateral arms control talks is towards the establishment of an international verification system.

The United Nations has been in the forefront of the endeavour to prevent an arms race in outer space. From 1981 to 1986 this theme was elaborated in much greater detail in a number of resolutions of the United Nations General Assembly (GA).² On 9 December 1982 the Assembly declared that any use of outer space other than for exclusively peaceful purposes would run counter to the agreed objective of general and complete disarmament under effective international control. Four days later, the GA reaffirmed in resolution 37/99 D the need to consider the negotiation of effective and verifiable treaties oriented toward the prevention of an arms race in outer space and the conclusion of an accord on the prohibition of ASAT weapons. Resolution 39/59 pointed out that in the context of multilateral negotiations for preventing an arms race in outer space, bilateral talks between the Soviet Union and the United States could make a significant contribution to such an objective. In the 1985 resolution 40/87 the Assembly asked the Secretary-General to invite all of its Member States to deliver their views in respect of "enhancing international co-operation in the field of preventing an arms race in outer space". In response to the invitation, on 10 June 1986 the Soviet Government sent the United Nations Secretary-General a letter³ which included a suggestion concerning the verification of an agreement on these matters; namely, that access should be granted to laboratories engaged in space research and that all nuclear testing should be stopped. On 11 July 1986,⁴ the USSR declared its readiness "to open up its laboratories, on a reciprocal basis, for verification of such an agreement" on preventing an arms race in space. The US had already tabled a similar proposal⁵ at the Conference on Disarmament (CD) on 20 March 1986, in order to provide the possibility for verifying the research undertaken in the context of the Strategic Defense Initiative (SDI) which President Reagan had announced in 1983. Though the concept

² The resolutions include the following: 36/97 C, 9 December 1981; 36/99, 9 December 1981; 37/83, 9 December 1982; 37/99 D, 13 December 1982; 38/70, 15 December 1983; 39/59, 12 December 1984; 40/87, 12 December 1985; 41/53, 3 December 1986.

³ A/41/470, 10 June 1986.

⁴ A/41/422, 11 July 1986.

⁵ CD/PV 349, 20 March 1986.

of this programme has undergone tremendous changes in recent years and it will still take a long time to be realized, implementation of the SDI programme would certainly threaten to weaponize space.

The Italian draft Additional Protocol⁶ to the Outer Space Treaty proposed a ban on all military activities in outer space. But this seems to be too general, since it would forbid all military space activities. This may cause problems because military satellites are used for verification and early warning. In order to supplement the verification provisions of the Outer Space Treaty, the Protocol establishes a complaints procedure under which States suspecting a violation of the treaty obligation would be able to lodge a complaint, supported by relevant information and possible evidence, with the Security Council (SC). However, the complaints procedure in the SC would not be very effective since the Super Powers which today have the possibility of breaching the suggested undertaking are also in a position to put an effective stop to any investigation by using their veto. Measures for national self-supervision, which are provided for in Article 2 of the Protocol, are not really effective as a means of verification. Italy urged that consideration be given to the adoption of collateral steps which would be aimed at increasing confidence, avoiding ambiguous actions in space and helping to pave the way for further disarmament negotiations.

One such step would be the strengthening and expansion of the Registration Convention. This established mandatory registration of space objects launched into orbit and beyond with the United Nations Secretary-General. States Parties are to supply information on "space objects, such as perigee, apogee . . . and general function . . . as soon as practicable". In relation to the "general function of the space object" being requested, to date no State has ever reported any space mission as serving a military function. Whereas, in fact, three out of four satellites in space fulfil military functions. To grant immunity to them is tantamount to legitimizing the military use of space, unless their "scientific" purpose and function can be advanced. It must be noted, however, that some military satellites are used for verification and early warning; the fact of military use of this kind must be accepted. Nevertheless, registration has the potential of being useful in preserving outer space, including the Moon and other celestial bodies, for peaceful purposes and of lessening suspicion as to the nature of space activities. To achieve these results, in my opinion, more timely and precise information would have to be furnished by the launching State. In 1985 Sweden advanced a proposal for the prevention of an arms race in outer space⁷ in which there are some verification elements: first, collateral measures could involve the strengthening of the 1975 Registration Convention; and, second, satisfactory means of verification should be found and international direct inspection applied, including on-site inspection whenever feasible.

⁶ CD/9, 26 March 1979.

⁷ CD/OS/WD8, 1 August 1985.

In 1984, France⁸ expressed its concern over the possible deployment of anti-satellite weapons and proposed the initiation of international consultation on the strengthening of the present system of declaration established by the 1975 Registration Convention, in order to provide more detailed information on the specification and purposes of objects launched, so as to improve the possibility of verification.

In 1981⁹ and 1983,¹⁰ the Soviet Union introduced two draft treaties on arms control in outer space. As regards verification, the drafts foresaw the use of national technical means and consultations among the signatory Parties. In addition, the Soviet Union made¹¹ a commitment not to be the first to put into outer space any type of anti-satellite weapon and also declared a unilateral moratorium on such launchings which would last as long as other countries, including the US, refrained from stationing anti-satellite weapons "of any kind" in outer space. Commenting on this move, the US representative to the CD said that such a moratorium was flawed since the Soviet Union had already established an advantage in this field; moreover, the Soviet draft treaty on a ban of ASAT systems overlooked "enormous verification problems involved in such agreements".¹² US spokesmen have often pointed out that any manoeuvrable objects which can be launched into space have potential ASAT capabilities.

On 17 March 1987, the Soviet Union¹³ advanced a new proposal suggesting the possibility of establishing international verification that weapons were not being deployed in outer space - an international inspectorate. Such an inspectorate would be given the right of access, for the purpose of on-site inspection, to all objects destined to be launched and stationed in space and to their corresponding launch vehicles. In 1988 the USSR proposed the setting up of an international verification system.¹⁴ The presence of international inspectors would reliably guarantee that the objects sent in outer space were not weapons. More than this, it proposed not merely a presence but a permanent presence of groups of inspectors at all space launch sites. The USSR also proposed the right to conduct an on-site inspection should suspicion arise that a launch was to be carried out from an undeclared launch site. Of course, the information about each forthcoming launch, including the location of the site, the type of launch vehicle, the time of launch and general information about the object to be launched would have to be given to members of the inspectorate in good time.

The fact that one of the major space Powers has taken this initiative must be welcomed. Poland¹⁵ supported the Soviet proposal to create an international inspectorate for implementing a verification system before it was too late.

⁸ CD/PV 263, 12 June 1984.

⁹ A/36/192, 20 August 1981.

¹⁰ A/38/194, 23 August 1983.

¹¹ CD/420, 23 August 1983.

¹² CD/PV258, 12 April 1984.

¹³ CD/PV397, 17 March 1987.

¹⁴ CD/817, CD/OS/WP19, 17 March 1988.

¹⁵ CD/PV402, 2 April 1987.

Incidentally, it is worth mentioning the accidents which have befallen the Soviet nuclear-powered radar ocean-surveillance spacecraft. The United Nations has approved the launching of reactors provided strict high-altitude safety guidelines are followed. (These guidelines govern the design of a US space reactor¹⁶ being prepared for launch in the 1990s). In all cases except *Cosmos 954* and *Cosmos 1402*, the reactor portion of the spacecraft has been placed in the safe high orbit. Some debris from the *Cosmos 954*, which re-entered the Earth's atmosphere on 24 January 1978 over Western Canada,¹⁷ was extremely hazardous, forcing Canada into a multimillion-dollar debris search and recovery operation, for which the Soviets eventually provided partial compensation. The reactor of *Cosmos 1402* re-entered the atmosphere on 3 February 1983 over the southern Atlantic Ocean.¹⁸ No treaty yet exists which prohibits nuclear-powered spacecraft. This is the problem. In view of the incidents mentioned, it is worth considering whether the launching of nuclear-powered satellites should be prohibited.

In concluding of this section I would like to recommend a re-examination of the 1975 Registration Convention, since the strengthening of this Convention must go hand-in-hand with any move to grant immunity to certain space objects, including all kinds of satellites. I also feel that, in the ultimate analysis, verification is a matter dependent on confidence-building between nations and on political will, and therefore cannot be seen only in technical terms.

III - The Moon and Other Celestial Bodies

The Moon and other Celestial bodies are a part of outer space, which with a more rigid definition may start about 100 km from the earth surface. Space law is largely dependent on the development of space technologies and can not at the present stage derive from a single, authoritative source. The rules on the Moon in the Moon Treaty (1979) are much clearer than those which exist in the Outer Space Treaty (1967).

THE OBLIGATIONS OF THE PARTIES TO THE MOON TREATY

The Moon Treaty reiterates, but also defines more precisely and expands, the provisions of the Outer Space Treaty.

Article 3 of the agreement, in particular, stipulates:

1. The Moon shall be used by all States Parties exclusively for peaceful purposes.
2. Any threat or use of force or any other hostile act or threat of hostile act on the Moon is prohibited. It is likewise prohibited to use the Moon in order to commit any such act or to engage in any such threat in relation to the earth, the Moon spacecraft, the personnel of spacecraft or man-made space objects.

¹⁶ AW&ST, November 15, 1982, p. 22.

¹⁷ AW&ST, February 6, 1978, p. 22; January 30, 1978, p. 33; February 13, 1978, p. 22.

¹⁸ AW&ST, January 10, 1983, p. 18; January 31, 1983, p. 20.

Paragraph 3 of Article 3 prohibits the placing "in orbit around or other trajectory to or around the Moon objects carrying nuclear weapons or any other kinds of weapons of mass destruction or place or use such weapons on or in the Moon". This prohibition adds more precision to the provisions of the Outer Space Treaty. According to Article 1 of the Moon Treaty, the prohibitions apply not only to the Moon but also to other celestial bodies within the solar system other than the Earth.

It should be noted that this agreement has not been ratified by the major space Powers. The question then arises whether this means that the possibility is maintained *a contrario*. Probably not, if one bears in mind that paragraph 4 of Article 3 is similar to the second paragraph of Article 4 of the Outer Space Treaty; furthermore, the first paragraph of the latter establishes the prohibition of two kinds of weapons (i.e., nuclear and mass destruction) in a general fashion. As the Moon Treaty has been ratified by so few States, the 1967 Outer Space Treaty basically continues to govern the activities of States on the Moon. Since the Outer Space and Moon Treaties are similar, there must be a reason why the Moon Treaty has not been ratified by the major space Powers. The answer to this question, in my opinion, could be the following.

One should bear in mind that nowadays the major space Powers are the only existing countries which possess the capacity to impact on the Moon. If one notes that Article 11 of the Moon Treaty stipulates:

1. The Moon and its natural resources are the common heritage of mankind, . . .
2. The Moon is not subject to national appropriation by any claim of sovereignty, by means of use or occupation, or by any other means;

then is it not difficult to arrive at the answer.

THE VERIFICATION PROVISIONS AND THE COMPLIANCE PROCEDURES OF THE MOON TREATY

The first paragraph of Article 15 of the Agreement stipulates that the activities of all States Parties in the exploration and use of the Moon should be compatible with provisions of this Agreement. "To this end, all space vehicles, equipment, facilities, stations and installations on the Moon shall be open to other States Parties. Such States Parties shall give reasonable advance notice of a projected visit, in order that appropriate consultations may be held . . . In pursuance of this Article, any State Party may act on its own behalf . . .".

These stipulations are clearly much more concrete than those in Article XII of the Outer Space Treaty. The Moon and Outer Space Treaties provide for intrusive on-site inspections within certain limits. It is useful to compare them with the on-site inspections of the Antarctic Treaty which are completely unrestricted. According to Article III the Parties to the Antarctic Treaty agree to exchange information with each other. The Parties to the Moon and Outer Space Treaties reserved the right actually to use the Moon and other celestial bodies, without obligation to inform the other Parties.

The second paragraph of Article 15 of the Moon Treaty states: "A State Party which has reason to believe that another State Party is not fulfilling the obligation . . . or that another State Party is interfering with the rights . . . may request consultations with that State Party". Furthermore the Moon Treaty goes on to say: "A State Party receiving such a request shall enter into such consultation without delay. Any other State Party which requests to do so shall be entitled to take part in the consultations". Compared with the Outer Space Treaty this stipulation is an important improvement and a step forward as the former has no such stipulation at all. Thus, so far as verification is concerned, the Moon Treaty has strengthened the obligation for co-operation between States Parties. This represents progress in the field of international outer space arms control. To date compliance with the Moon Treaty has been strict, with no violations reported.

THE ROLE OF THE UNITED NATIONS

There are several clauses in the Moon Treaty which define the role of the United Nations, especially that of the Secretary-General, who is to receive information from States Parties carrying out activities on the Moon and other celestial bodies. The second paragraph of Article 15 states that, to resolve any controversy, consultations between States Parties to the agreement should be held and "the Secretary-General of the United Nations shall be informed of the results of the consultations and shall transmit the received information to all States Parties concerned". Paragraph 3 of Article 15 stipulates: "If difficulties arise in connection with the opening of consultations or if consultations do not lead to a mutually acceptable settlement, any State Party may seek the assistance of the Secretary-General, without seeking the consent of any other State Party concerned, in order to resolve the controversy". Article XI of the Outer Space Treaty stipulates: "In order to promote international co-operation in the peaceful exploration and use of outer space, States Parties to the Treaty conducting activities in outer space, including the Moon and other celestial bodies, agree to inform the Secretary-General of the United Nations On receiving the said information, the Secretary-General of the United Nations should be prepared to disseminate it immediately and effectively".

Most of the multilateral treaties in force concerning arms control in outer space contain provisions about the role of the United Nations. Although the Moon Treaty is far more explicit and comprehensive than the Outer Space Treaty, the stipulations concerning the role of the United Nations are too general. In fact, the United Nations and its Secretary-General have little authority or power effectively to control or to limit the arms race in outer space.

In the past thirty years, although we have seen several General Assembly resolutions and a number of treaties intended to prevent an arms race in space, the development of military satellites and research on space weapons has continued unabated. Thus, the negotiation of suitable treaties continues to be a vital element for the creation of conditions conducive to the peaceful utilization of outer space and for

prevention of an arms race in that environment. To draft new arms control treaties with effective measures of verification is an urgent task for the international community. As an essential element in all disarmament and arms control agreements, adequate and effective verification should be further examined and effective methods and procedures considered in the negotiations. In order to facilitate the conclusion and effective implementation of disarmament treaties and to create confidence, States Parties should accept the inclusion of appropriate provisions for verification.

IV - Conclusions

Present public concern about the weaponization of outer space has its origins more in fears for the future than in lessons from the past. The 1967 Outer Space Treaty offers a convenient point of departure for any new legislative effort. From a review of various possible approaches to prevent an arms race in outer space, it seems clear that there is no simple panacea for the many problems confronting us. It is necessary, therefore, on the one hand to endeavour to overcome the shortcomings of the Outer Space Treaty and elaborate a new agreement, and on the other to call upon the political leaders of the space Super Powers to sign the Moon Treaty.

1. In order to speed up the progress of non-weaponization of outer space all States which have space capabilities, especially the two Super Powers, should accept effective verification procedures. As the 1975 Registration Convention requiring the registration of launched satellites is an important verification measure, its re-examination should be recommended, since the strengthening of this Convention must go hand-in-hand with any move to grant immunity to certain space objects.
2. The on-site inspection measures and compliance procedures which exist in the Outer Space and Moon Treaties are still far from what is required. Verification of compliance with the provisions of the treaties is a matter of primary concern; the reasons may be related to the perception that compliance with the treaties has been unsatisfactory due to the absence of effective verification provisions. The newly proposed arms control measures, notably those applicable to outer space, require the use of national technical means (NTM). However, verification by NTM would not seem sufficient due to such difficulties as distinguishing between a launcher for a non-military satellite and a space weapon system. While NTM verification is satisfactory for a bilateral agreement, it may not be adequate or acceptable for a multilateral treaty since not all States possess the necessary technical capacity. Thus the Soviet proposal for the establishment of an international inspectorate and the permanent presence of inspectors at all space launch sites may be a good idea.
3. We have recognized the value of effective verification measures, but we should also note that too great an emphasis on this issue could delay concrete progress on the prevention of an arms race in outer space. The issue of

verification should not, in this view, become the major stumbling block for any progress in negotiations. India¹⁹ deplored the fact that, considering the way military technology was developing, "most of the new weapon systems are likely to become unverifiable sooner or later". Such a development would only demonstrate how mistaken had been the emphasis on verification.

4. Enhancement of international confidence and the sense of security would provide a key element for preventing an arms race in outer space. Efforts should be made to increase the international openness of national space activities by requiring the diffusion of more precise information on the characteristics of satellites and by the sharing of research data. If these measures were incorporated into a new treaty, they would greatly enhance international confidence-building.

The world is facing the inescapable fact that the danger arising from human activity in outer space is increasing from day to day.

¹⁹ CD/PV262, 26 April 1984.

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Table 1: Multilateral Treaties Relevant to Outer Space

Name of Treaty	Scope, contents	Verification provisions, methods	Compliance procedures
Partial Test Ban Treaty (1963)	Prohibits any nuclear weapon test in atmosphere, outer space and under water.	National Technical Means.	None
Outer Space Treaty (1967)	Protects common peaceful interest of all mankind in the exploration and use of outer space; prohibits: placing in orbit of nuclear weapons and other weapons of mass destruction; establishment of military installations and fortifications; military manoeuvres on celestial bodies.	Observation of flights of space objects on a basis of equality. General on-site inspection with respect to the Moon and other celestial bodies on a basis of reciprocity (Arts. 10, 12).	Consultations (Art. 9).
Registration Convention (1976)	Provides for the registration as soon as practicable of space objects with the Secretary-General of the United Nations and for the supply of information on space objects such as orbits and general function (Art. 4).	None	Statement and consultations (Art. 6).

Name of Treaty	Scope, contents	Verification provisions, methods	Compliance procedures
ENMOD Convention (1978)	The term "environmental modification techniques" refers to any technique for changing - through the deliberate manipulation of natural process - the dynamics, composition or structure of the Earth . . . or of outer space (Art. 2).	National Technical Means (Art. 5).	Co-operation procedure, including Consultative Committee of Experts. Lodging of complaints with Security Council (Art. 5). Review conferences (Art. 8).
The Moon Treaty (1964)	Given the activities of States on the Moon and other celestial bodies: prohibits threat or use of force or any hostile act on the Moon and celestial bodies including orbits around them; prohibits the use of the Moon, etc., as a base for hostile acts; nuclear weapons or other weapons of mass destruction are banned from the Moon, etc.; establishment of military bases, installations and fortifications, the testing of weapons and the conduct of military manoeuvres are also prohibited.	General on-site inspection with respect to the Moon and other celestial bodies using own means or with the assistance of any other party or through international procedures (Art. 5).	Consultations, settlement of disputes by peaceful means with or without assistance of Secretary-General (Art. 15). Review conferences (Art. 16).
Telecommunication Convention (1984)	Concerns the allocation of radio frequencies in space, so as to avoid harmful interference. Provides, however, that members retain entire freedom with regard to military radio installations.		Regular conferences of the ITU.

Table 2: Procedures related to the Outer Space Treaty of 1967
Main Treaty Provisions and Monitoring and Verification Methods

	Factfinding							Assessment procedures					
	0	1	2	3	4	5	6	7	8	9	10	11	12
Establishment of data base													
Limitation of use													
Limitation of deployment													
Limitation of testing													
Limitation of possession													
Limitation of production													
Limitation of transfer													
Prohibition of use													
<i>Prohibition of deployment</i>													
<i>Prohibition of testing</i>													
Prohibition of possession													
Prohibition of production													
Prohibition of transfer													
Destruction													

0 = No method; 1 = National Technical Means; 2 = Exchange of data; 3 = Consultation; 4 = Control Posts/Observation; 5 = On-site inspection on a State territory; 6 = On-site inspection on a non-State territory; 7 = IAEA Safeguards; 8 = Review Conference; 9 = Submission of report; 10 = Consultation; 11 = Referral to an international organization; 12 = Referral to the International Court of Justice.

For further explanation see also pages 140 and 32-34.

Explanatory note on Table 2

The Outer Space Treaty contains a deployment and testing prohibition (Article IV) in an environment where at the time of signature neither weapons were being deployed nor military activity taking place.

Factfinding methods

States Parties engage to inform about their activities in Outer Space (Article XI) and shall consider any request by other States to be afforded an opportunity to observe the flight of space objects launched by these States (Article X).

Visits, i.e. inspections of stations, installations etc. shall be possible on a basis of reciprocity (Article XII). Visits are restricted to the stations and installations on the Moon and other Celestial bodies (i.e. excludes visits of installations in Outer Space).

Assessment procedures

The Treaty does not contain any assessment procedures.

The Relevant Treaty Articles

TREATY ON PRINCIPLES GOVERNING THE ACTIVITIES OF STATES IN THE EXPLORATION AND USE OF OUTER SPACE, INCLUDING THE MOON AND OTHER CELESTIAL BODIES

(27 JANUARY 1967, LONDON, MOSCOW AND WASHINGTON)

ARTICLE IV

States Parties to the Treaty undertake not to place in orbit around the earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner.

The moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively for peaceful purposes. The establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military manoeuvres on celestial bodies shall be forbidden. The use of military personnel for scientific research or for any other peaceful purposes shall not be prohibited. The use of any equipment or facility necessary for peaceful exploration of the moon and other celestial bodies shall also not be prohibited.

ARTICLE X

In order to promote international co-operation in the exploration and use of outer space, including the moon and other celestial bodies, in conformity with the purposes of this Treaty, the States Parties to the Treaty shall consider on a basis of equality any requests by other States Parties to the Treaty to be afforded an opportunity to observe the flight of space objects launched by these States.

The nature of such an opportunity for observation and the conditions under which it could be afforded shall be determined by agreement between the States concerned.

ARTICLE XI

In order to promote international co-operation in the peaceful exploration and use of outer space, States Parties to the Treaty conducting activities in

outer space, including the moon and other celestial bodies, agree to inform the Secretary-General of the United Nations as well as the public and the international scientific community, to the greatest extent feasible and practicable, of the nature, conduct, locations and results of such activities. On receiving the said information, the Secretary-General of the United Nations should be prepared to disseminate it immediately and effectively.

ARTICLE XII

All stations, installations, equipment and space vehicles on the moon and other celestial bodies shall be open to representatives of other States Parties to the Treaty on a basis of reciprocity. Such representatives shall give reasonable advance notice of a projected visit, in order that appropriate consultations may be held and that maximum precautions may be taken to assure safety and to avoid interference with normal operations in the facility to be visited.

ARTICLE XVI

Any State Party to the Treaty may give notice of its withdrawal from the Treaty one year after its entry into force by written notification to the Depositary Governments. Such withdrawal shall take effect one year from the date of receipt of this notification.

Table 3: Procedures related to the Moon Treaty of 1979
Main Treaty Provisions and Monitoring and Verification Methods

	Factfinding							Assessment procedures					
	0	1	2	3	4	5	6	7	8	9	10	11	12
Establishment of data base													
Limitation of use													
Limitation of deployment													
Limitation of testing													
Limitation of possession													
Limitation of production													
Limitation of transfer													
Prohibition of use													
Prohibition of deployment													
Prohibition of testing													
Prohibition of possession													
Prohibition of production													
Prohibition of transfer													
Destruction													

0 = No method; 1 = National Technical Means; 2 = Exchange of data; 3 = Consultation; 4 = Control Posts/Observation; 5 = On-site inspection on a State territory; 6 = On-site inspection on a non-State territory; 7 = IAEA Safeguards; 8 = Review Conference; 9 = Submission of report; 10 = Consultation; 11 = Referral to an international organization; 12 = Referral to the International Court of Justice.

For further explanation see also pages 143 and 32-34.

Explanatory note on Table 3

The Moon Treaty prohibits the use of force or any other hostile act (Article III, paragraph 2), the use of nuclear weapons or any other weapons of mass destruction, as well as their deployment (paragraph 3) and any military activity or weapon tests (paragraph 4) in an environment where such weapons or activities were non-existent at the time of signature.

Factfinding methods

For the verification of the prohibitive clauses the Treaty provides for consultations (Article XV, paragraph 2) as well as general on-site inspections on the Moon (paragraph 1).

Assessment procedures

Assessment of facts is through consultation (Article XV, paragraph 2) and/or referral to the UN Secretary General.

Article XVIII provides for different review procedures.

The Relevant Treaty Articles

AGREEMENT GOVERNING THE ACTIVITIES OF STATES ON THE MOON AND OTHER CELESTIAL BODIES

(18 DECEMBER 1979, NEW YORK)

ARTICLE III

(1) The moon shall be used by all States Parties exclusively for peaceful purposes.

(2) Any threat or use of force or any other hostile act or threat of hostile act on the moon is prohibited. It is likewise prohibited to use the moon in order to commit any such act or to engage in any such threat in relation to the earth, the moon, spacecraft, the personnel of spacecraft or man-made space objects.

(3) States Parties shall not place in orbit around or other trajectory to or around the moon objects carrying nuclear weapons or any other kinds of weapons of mass destruction or place or use such weapons on or in the moon.

(4) The establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military manoeuvres on the moon shall be forbidden. The use of military personnel for scientific research or for any other peaceful purposes shall not be prohibited. The use of any equipment or facility necessary for peaceful exploration and use of the moon shall also not be prohibited.

ARTICLE V

(1) States Parties shall inform the Secretary-General of the United Nations as well as the public and the international scientific community, to the greatest extent feasible and practicable, of their activities concerned with the exploration and use of the moon. Information on the time, purposes, locations, orbital parameters and duration shall be given in respect of each mission to the moon as soon as possible after launching, while information on the results of each mission, including scientific results, shall be furnished upon completion of the mission. In the case of a mission lasting more than sixty days, information on conduct of the mission including any scientific results, shall be given periodically at thirty-day intervals. For missions lasting more than six months, only significant addi-

tions to such information need be reported thereafter.

(2) If a State Party becomes aware that another State Party plans to operate simultaneously in the same area of or in the same orbit around or trajectory to or around the moon, it shall promptly inform the other States of the timing of and plans for its own operations.

(3) In carrying out activities under this Agreement, States Parties shall promptly inform the Secretary-General, as well as the public and the international scientific community, of any phenomena they discover in outer space, including the moon, which could endanger human life or health, as well as of any indication of organic life.

ARTICLE IX

(1) States Parties may establish manned and unmanned stations on the moon. A State Party establishing a station shall use only that area which is required for the needs of the station and shall immediately inform the Secretary-General of the United Nations of the location and purposes of that station. Subsequently, at annual intervals that State shall likewise inform the Secretary-General whether the station continues in use and whether its purposes have changed.

(2) Stations shall be installed in such a manner that they do not impede the free access to all areas of the moon by personnel, vehicles and equipment of other States Parties conducting activities on the moon in accordance with the provisions of this Agreement or of Article I of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies.

ARTICLE XV

(1) Each State Party may assure itself that the activities of other States Parties in the exploration and use of the moon are compatible with the provisions of this Agreement. To this end, all space vehicles, equipment, facilities, stations and installations on the moon shall be open to other States Parties. Such States Parties shall give reasonable advance notice of a projected visit, in order that appropriate consultations may be held and that maximum precautions may be taken to assure safety

and to avoid interference with normal operations in the facility to be visited. In pursuance of this article, any State Party may act on its own behalf or with the full or partial assistance of any other State Party or through appropriate international procedures within the framework of the United Nations and in accordance with the Charter.

(2) A State Party which has reason to believe that another State Party is not fulfilling the obligations incumbent upon it pursuant to this Agreement or that another State Party is interfering with the rights which the former State has under this Agreement may request consultations with that State Party. A State Party receiving such a request shall enter into such consultations without delay. Any other State Party which requests to do so shall be entitled to take part in the consultations. Each State Party participating in such consultations shall seek a mutually acceptable resolution of any controversy and shall bear in mind the rights and interests of all States Parties. The Secretary-General of the United Nations shall be informed of the results of the consultations and shall transmit the information received to all States Parties concerned.

(3) If the consultations do not lead to a mutually acceptable settlement which has due regard for the rights and interests of all States Parties, the Parties concerned shall take all measures to settle the dispute by other peaceful means of their choice appropriate to the circumstances and the nature of the dispute. If difficulties arise in connexion with the opening of consultations or if consultations do not lead to a mutually acceptable settlement, any State Party may seek the assistance of the Secretary-General, without seeking the consent of any other

State Party concerned, in order to resolve the controversy. A State Party which does not maintain diplomatic relations with another State Party concerned shall participate in such consultations, at its choice, either itself or through another State Party or the Secretary-General as intermediary.

ARTICLE XVIII

Ten years after the entry into force of this Agreement, the question of the review of the Agreement shall be included in the provisional agenda of the General Assembly of the United Nations in order to consider, in the light of past application of the Agreement, whether it requires revision. However, at any time after the Agreement has been in force for five years, the Secretary-General of the United Nations, as depositary, shall, at the request of one third of the States Parties to the Agreement and with the concurrence of the majority of the States Parties, convene a conference of the States Parties to review this Agreement. A review conference shall also consider the question of the implementation of the provisions of Article 11 paragraph 5, on the basis of the principle referred to in paragraph 1 of that article and taking into account in particular any relevant technological developments.

ARTICLE XX

Any State Party to this Agreement may give notice of its withdrawal from the Agreement one year after its entry into force by written notification to the Secretary-General of the United Nations. Such withdrawal shall take effect one year from the date of receipt of this notification.

List of Parties

**Treaty on Principles Governing the Activities
of States in the Exploration and Use of Outer Space,
Including the Moon and other Celestial Bodies
(as of 31 July 1990)**

Afghanistan	1988	France	1970
Antigua and Barbuda	1988	Gambia	S
Argentina	1969	German Democratic Republic ¹	1967
Australia	1967	Germany, Federal Republic of ¹	1971
Austria	1968	Ghana	S
Bahamas	1976	Greece	1971
Bangladesh	1986	Guinea-Bissau	1976
Barbados	1968	Guyana	S
Belgium	1973	Haiti	S
Benin	1986	Holy See	S
Bolivia	S	Honduras	S
Botswana	S	Hungary	1967
Brazil	1969	Iceland	1968
Bulgaria	1967	India	1982
Burkina Faso	1968	Indonesia	S
Burundi	S	Iran, Islamic Republic of	S
Byelorussian Soviet Socialist Republic	1967	Iraq	1968
Cameroon	S	Ireland	1968
Canada	1967	Israel	1977
Central African Republic	S	Italy	1972
Chile	1981	Jamaica	1970
China	1983	Japan	1967
Colombia	S	Jordan	S
Cuba	1977	Korea, Republic of	1967
Cyprus	1972	Kuwait	1972
Czech and Slovak Federal Republic	1967	Lao People's Democratic Republic	1972
Denmark	1967	Lebanon	1969
Dominican Republic	1968	Lesotho	S
Ecuador	1969	Libyan Arab Jamahiriya	1968
Egypt	1967	Luxembourg	S
El Salvador	1969	Madagascar	1968
Equatorial Guinea	1989	Malaysia	S
Ethiopia	S	Mali	1968
Fiji	1972	Mauritius	1969
Finland	1967	Mexico	1968
			...

...			
Mongolia	1967	Spain	1968
Morocco	1967	Sri Lanka	1986
Myanmar	1970	Sweden	1967
Nepal	1967	Switzerland	1969
Netherlands	1969	Syrian Arab Republic	1968
New Zealand	1968	Taiwan	1970
Nicaragua	S	Thailand	1968
Niger	1967	Togo	1989
Nigeria	1967	Tonga	1971
Norway	1969	Trinidad and Tobago	S
Pakistan	1968	Tunisia	1968
Panama	S	Turkey	1968
Papua New Guinea	1980	Uganda	1968
Peru	1979	Ukrainian Soviet Socialist Republic	1967
Philippines	S	Union of Soviet Socialist Republics	1967
Poland	1968	United Kingdom	1967
Romania	1968	United States of America	1967
Rwanda	S	Uruguay	1970
San Marino	1968	Venezuela	1970
Saudi Arabia	1976	Viet Nam	1980
Seychelles	1978	Yemen, People's Democratic	
Sierra Leone	1967	Republic of	1979
Singapore	1976	Yugoslavia	S
Somalia	S	Zaire	S
South Africa	1968	Zambia	1973

S means that the Treaty was signed, but no further action has been taken.

¹ In 1990 the two States merged forming Germany.

List of Parties

Agreement Governing the Activities of States on the Moon and other Celestial Bodies (as of 31 July 1990)

Australia	1986
Austria	1984
Chile	1981
France	S
Guatemala	S
India	S
Morocco	S
Netherlands	1983
Pakistan	1986
Peru	S
Philippines	1981
Romania	S
Uruguay	1981

S means that the Treaty was signed, but no further action has been taken.

Chapter 5

The Tlatelolco Treaty (1967)

Miguel E. Estrada Oyuela

I - Introduction

Before considering the verification measures foreseen in the Treaty for the Prohibition of Nuclear Weapons in Latin America, better known as the Tlatelolco Treaty, it is convenient to summarize its structure and contents, and thereafter evaluate the degree of adequacy of such measures for the purposes and ends of this instrument.

The Treaty has been structured in a main body and two Additional Protocols. It was opened for signature by all sovereign States situated in their entirety south of latitude 35° north in the Western Hemisphere, with the conditions provided in paragraph 2 of Article 25. The basic undertakings of the Parties are to:

1. Renounce the testing, use, manufacturing, production or acquisition by any means whatsoever of any nuclear weapon;
2. Renounce the receipt, storage, installation, deployment or any form of possession of any nuclear weapons; and
3. Perform, or collaborate with third Parties in the performance of, peaceful nuclear explosions, only provided that they do so in accordance with the provisions of Article 18, which provides for the international verification of the peaceful character of the project involved.

The first of its Additional Protocols lays down that the extra-regional Powers being, *de jure* or *de facto*, internationally responsible for territories lying within the area delimited by the Treaty, undertake to respect the nuclear-weapons-free character of the region. Additional Protocol II has been opened for the signature of all nuclear-weapon States. Its provisions include two commitments:

1. To keep the zone free of nuclear weapons; and
2. Not to use or threaten to use nuclear weapons against the Contracting Parties to the Treaty.

The objective of the Treaty consists in establishing a zone denuclearized for warlike purposes, so as to keep Latin American States free from the threat implied by the presence of nuclear weapons. This purpose would be meaningless if the Treaty were not respected by those extra-regional Powers that still hold territories under colonial administration and by all other nuclear-weapon States. This is why the Additional Protocols were necessary.

II - Provisions on Verification

The commitments of the Contracting Parties are subject to the control system established by Articles 12 through 18 of the Treaty. The purpose of the system, pursuant to Article 12, consists in verifying that:

1. Nuclear materials intended for peaceful uses are not used in the testing or manufacture of nuclear weapons;
2. Explosions for peaceful purposes are carried out under the conditions of international verification expressly established for this effect; and
3. No nuclear weapons are either introduced into the zone or manufactured with materials brought from outside.

IAEA SAFEGUARDS

Article 13 of the Treaty establishes that each Contracting Party shall negotiate a safeguards agreement with the International Atomic Energy Agency covering all its nuclear activities. Most of the Latin American States for which the Treaty is in force are also Parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). In almost all cases, the safeguards agreements are linked to both treaties. The IAEA has used the standard text prepared in relation to the NPT provisions, which does not necessarily adapt itself to the particularities of the Tlatelolco Treaty. One important difference between both instruments, for instance, is that the NPT permits the deployment of nuclear weapons in the territory of a non-nuclear-weapon State, while the Tlatelolco Treaty - consistent with its objectives - does not.

Only three safeguards agreements were signed exclusively pursuant to the Tlatelolco Treaty: those concluded by Mexico (INFCIRC/118), Colombia (INFCIRC/306) and Panama (INFCIRC/316). The first was the only one not based on the above-mentioned standard text. Even if it expressly omitted to contemplate some specific aspects of the Tlatelolco Treaty, it was not adulterated by provisions from the NPT. However, the application of this agreement was suspended after the entry into force of another safeguards agreement concluded by Mexico after having ratified the NPT.

The other two agreements were adjusted to the NPT type and follow both the standard text as well as the methodology of IAEA's document INFCIRC/153, which sets out the structure and content of this type of agreement. Colombia and Panama have taken the provisions of the NPT especially into account since, at the moment of negotiations of their respective safeguards agreements, both were signatories of that instrument. It is appropriate to recall that Article 18 of the Vienna Convention on the Law of Treaties establishes that the signatories of an international treaty shall abstain from carrying out any action contrary to its purposes and ends. It seems relevant that Panama, after the negotiation with the IAEA on the safeguards agreement, has considerably delayed its signature until after the ratification of the NPT.

OPANAL'S CONTROLS

In order to implement the control system set up in the Treaty, in addition to the safeguards applied by IAEA, an *ad hoc* agency was established: the Agency for the Prohibition of Nuclear Weapons in Latin America (OPANAL, as the Spanish acronym). Its principal organs are:

1. The General Conference of Member States;
2. A Council composed of five Members appointed for periods of four years (partially renewed every two years, without re-election for the following period);
3. A Secretariat composed of a Secretary-General and the necessary staff.

Ordinary Reports

Every six month the Parties shall submit to OPANAL a statement that no activity forbidden by the Treaty has occurred in their respective territories. Moreover, they shall also send a copy of any report submitted to IAEA regarding the application of safeguards. The technical capability of OPANAL to assess the information it receives is somewhat unclear because the character of that agency is more political than technical; matters in connection with the implementation of the Treaty must be addressed by the Parties directly to the Inter-American Nuclear Energy Commission. We shall return to this matter later when referring to the question of confidentiality.

Special Reports

Article 15 empowers the Secretary-General to request, with the prior approval of the Council, any complementary or supplementary information regarding any event or circumstance connected with compliance with the Treaty.

Special Inspections

The OPANAL Council is empowered to carry out special inspections whenever any Party submits a denunciation based on the suspicion that some prohibited activity has been performed or is about to be performed by another Party. In such a case the inspectors will have full and free access to all places and all information needed for the fulfilment of their duties. The scope of that provision is so wide that it includes any type of activity, either nuclear or not, because it will depend on the terms of the challenge.

The inspectors must be appointed by the General Conference, which in addition must establish the rules for the procedures to be followed for organizing and carrying out the inspections. OPANAL was constituted in 1969 and as yet no challenge has been submitted leading to special inspections. Nor have the Conferences set up rules

for such inspections, probably because so far there has been no need to. It has not been determined whether the inspectors would be appointed when the need for an inspection arose, or if at a given time the General Conference would appoint a team of inspectors.

The reports from a special inspection should be sent immediately to all the Parties. Such reports must be also sent to the Secretary-General of the United Nations, to be transmitted through him to the General Assembly and the Security Council. As soon as the Parties have taken cognizance of these reports, any one of them or OPANAL's Council may request an extraordinary meeting of the General Conference. According to the results, the General Conference may bring into effect the mechanisms foreseen in Article 20 for cases of non-compliance.

III - Difficulties Arising from Verification

As mentioned in the description of OPANAL's control measures, Member States must provide IAEA with a copy of any report on the application of safeguards. It is not the intention of this paper to explain in detail what this implies, but it does include designs of nuclear installations and - very often - relevant data on industrial processing. The IAEA has implemented a confidentiality system for managing the information it receives; admittedly, the system has defects and could be improved. OPANAL, on the other hand, has no system providing any degree of protection for the information received. Moreover, the purpose for which so much information is required is unclear.

It seems that the Parties did not intend to confer on OPANAL a technical competence, as is suggested by Article 19.3 mentioned above. In any event, with its current structure, OPANAL lacks the technical capability to assess information. Even so, the Secretary-General may ask for complementary or supplementary information which not only would not be handled with any degree of confidentiality, but would be disseminated among all Member States because it is expressly so provided in the Treaty.

SPECIAL INSPECTIONS

We have already seen OPANAL's wide power to arrange special inspections. Although they have not been regulated by the General Conference, the right to full and free access to any kind of installation and to any sort of information fails to consider the protection of industrial secrets. The transmission of the results of special inspections to the United Nations General Assembly, *inter alia*, implies a total disregard of the economic value of the information that may be obtained through such inspections.

INTRODUCTION OF NUCLEAR WEAPONS FROM ABROAD

The main purpose of the Tlatelolco Treaty is to maintain a zone free of nuclear weapons. This does not depend exclusively on the will of the States within the region, but also needs the commitment of extra-regional States which possess territories under their international responsibility (even when the legitimacy of such a responsibility is controversial), as well as the commitment of those States which possess nuclear weapons. Is it possible to verify compliance with those commitments?

OPANAL is empowered to apply controls on its Member States, but its jurisdiction does not include the non-independent Territories existing in the area delimited in the Additional Protocols. In such Territories the only verification measures applied are the IAEA safeguards. The practice of this Agency is to apply safeguards only to peaceful nuclear activities, in order to ensure that the nuclear materials intended for such activities will not be diverted to military or unknown purposes. The IAEA control excludes any military installation, as well as warships and aircraft. Consequently, neither OPANAL nor the IAEA is in a position to determine whether nuclear weapons have been introduced into the above-mentioned territories. Moreover, the wording of some safeguards agreements concluded by nuclear-weapon States admits the possible presence of nuclear materials not subject to safeguards within those territories under the international responsibility of the said States.

Some security doctrines of States possessing nuclear weapons show that they are not willing either to confirm or to deny the existence of such weapons in a given place at a given time. Those doctrines have prevented the States that uphold them from declaring that they fulfil the commitments entered pursuant to the Additional Protocols.

TRANSIT OF NUCLEAR WEAPONS WITHIN THE ZONE

The problem of the innocent transit of ships and aircraft carrying nuclear weapons was not expressly considered in the text of the Treaty nor in its Protocols. The Vienna Convention on the Law of Treaties states that an international agreement must be interpreted according to the current meanings of the words employed and taking into consideration both the agreement's aims and purpose. Article 1 of the Tlatelolco Treaty prohibits "any form of possession of any nuclear weapons". The action of transporting implies possession, and hence the transit of nuclear weapons within the region should be considered as forbidden. Indeed, it was so declared by the Argentine Republic in the Final Act of the Commission for the Denuclearization of Latin America.

However, that interpretation is not unanimous. In the same Act there is a statement which, on the contrary, would leave the question open to the rules of customary law that permit the innocent transit of military ships and aircraft with the authorization of the involved Party. Some nuclear-weapon States have expressed similar sentiments in their interpretative statements made on the occasion of signing or ratifying the Additional Protocols. However, if interpreted in the light of its aims

and purposes, there can be no doubt that the transit of nuclear weapons within the denuclearized zone is contrary to the Treaty's aims and purposes. Nowhere does the Treaty provide for verification in this regard.

IV - The Additional Protocols

Before drawing some conclusions, it may be useful to describe briefly the role and scope of the Additional Protocols of the Treaty, particularly from the perspective of its verification provisions.

Additional Protocols I and II commit States having signed them to respect the statute of denuclearization of the zone and not to use or threaten to use nuclear weapons against Parties to the Treaty.

As pointed out in the opening section, the Additional Protocols are of central importance to ensure the successful operation of the instrument. As no country within the region possesses nuclear weapons, the Treaty's viability is inseparable from the way in which the nuclear-weapon States comply with its provisions. This has to be considered when assessing the actual application of the instrument.

At the time of the negotiation of the texts of the Protocols, special emphasis was given how their application could be verified. In spite of this, it was not possible to arrive to any verification procedure that would reconcile the security perspective of the countries of the region with that of the nuclear-weapon States concerned. As a consequence, the Protocols stand alone without any form of verification.

This has rightly been considered a weakness of the instrument, as there are territories covered by the Treaty that fall *de jure* or *de facto* under the jurisdiction and responsibility of nuclear-weapon States. The absence of any form or provision to support the obligations defined in the Protocols cannot but be judged as important omissions.

Nuclear-weapon States are thus not subject to any of the mechanisms provided for by the Treaty and employed by OPANAL in its application; consequently, the only source of multilateral control over their activities are the IAEA's safeguards, which apply to them only under very specific (and restrictive) conditions. This is one of the concrete problems that should be addressed in the future if the Nuclear Weapon Free Zone of Latin America is to have real credibility.

Another related problem regarding the Additional Protocols is that of the negative security assurance included in Additional Protocol II. Article 3 of this Protocol consists of an undertaking by the States concerned not to use or threaten to use nuclear weapons against the contracting Parties. Unfortunately, this clear provision has been seriously affected by the Interpretative Declarations of the four nuclear-weapon States which basically reiterate the position taken by them in different unilateral declarations. With the sole exception of China (whose declaration is "unconditional"), these declarations include many reservations, conditions and qualifications that the contracting Parties must fulfil to benefit from the said "negative assurance".

The nuclear-weapon States having thus reiterated in the Tlatelolco context their overall approach to questions of security assurances, it is clear that the contracting Parties are not obtaining anything more, in terms of a guarantee of non-use of nuclear weapons against themselves, than the rest of the international community through the well-known unilateral declarations.¹

V - Argentina and Brazil

Although admittedly beyond the basic scope of this paper, it is nevertheless important to add some words on the ongoing process of co-operation in the nuclear field between Argentina and Brazil, particularly focusing on those aspects of the process that will influence the future full entry into force of the Treaty of Tlatelolco.

This is so for reasons that are easily understood. In the first place, whenever the question of the Treaty of Tlatelolco is considered, the fact that the two most advanced countries of the region in nuclear matters have chosen to remain on the sidelines raises an undeniable question mark and puts into doubt the real validity of the Treaty under present circumstances.

Secondly, in the context of their bilateral relations, Buenos Aires and Brasília are currently studying specific mechanisms to institutionalize their regime of mutual co-operation and exchange of information in the nuclear field. It should be noted that these newly devised methodologies might well come under the aegis of an amended Tlatelolco Treaty, or from a bilateral arrangement between the two countries that could somehow be linked to the "mother Treaty", thus filling the present gap.

Regarding the origins of this initiative, under the promising political atmosphere provided by the return to democratic rule in 1983 for Argentina and in early 1985 for Brazil, the two countries decided to give renewed impetus to their bilateral exchanges in the nuclear field. Shortly afterwards, Presidents Alfonsín and Sarney signed the Iguassú Declaration (November 1985) which defined new terms for the two countries' nuclear rapport. This was followed by further declarations and the historic visits of the two Heads of State to nuclear facilities (i.e. reprocessing plants) that were considered of particular significance in the eyes of those concerned with proliferation in the subcontinent.

The political impact of these visits was complemented by the presence of technicians from both countries at the different sites and the establishment of specific mechanisms (notably a permanent binational committee) to ensure the continuity of the co-operative process. Although this is an ongoing effort, and without dwelling upon matters reserved to the participants in those meetings, the elaboration of a regional-

¹ It is important to note here that with the exception of the Chinese "guarantee" of non-use of nuclear weapons against non-nuclear-weapon States, the remaining four have different conditions and qualifications to apply. For a detailed analysis of their contents and implications, the annual reports of the Conference on Disarmament include a section dealing with the (unsuccessful) negotiations of an *ad hoc* committee dealing with the question.

specific system of mutual inspections has been under consideration by the Permanent Committee for some time now.

Without prejudging the final outcome, it is clear that any jointly devised scheme will try to overcome some of the shortcomings that the Tlatelolco provisions evince, especially in areas identified throughout this paper: the degree and modalities of access to the relevant installations, role and powers of OPANAL, links with the existing and standing agreements (IAEA), spread of information gathered through the inspections, etc.

In the view of many, this offers the most promising possibility at present of the Treaty finally becoming what its authors wished it to be by bringing in the two leading countries of the region in the nuclear field.

VI - Conclusions

As can be seen from the preceding description of the provisions on verification included in the Treaty, there exists at the theoretical level some degree of overlap between the standing agreements entered into by almost all Parties with IAEA and the mechanisms specifically provided for by the Treaty and its operational tool, OPANAL.

In fact, some of the powers of OPANAL and the provisions of the Treaty in general go beyond what a standard IAEA safeguards agreement would require, in particular as far as the confidentiality system and spread of information are concerned.

It must be noted, however, that the real operation of the Treaty has relied almost completely on IAEA and its inspections in monitoring compliance. OPANAL's role could be described as more political than technical in this sense.

The situation should not be construed as an inherent weakness of the regional system, rather a recognition of the unnecessary duplication that would be created by the establishment of a parallel monitoring structure devoted solely to Tlatelolco.

As stated earlier, the functioning and operation of Tlatelolco still lack the *ad hoc* inspections regime envisaged at the time of its drafting. This has led to an incorrect identification of the IAEA system with the one that should have been elaborated in the context of Tlatelolco.

The positive evolution of the process of integration and harmonization of Brazil and Argentina's nuclear policies may well provide an answer to this question.

Annexes

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Table 1: Procedures related to the Tlatelolco Treaty of 1967
Main Treaty Provisions and Monitoring and Verification Methods

	Factfinding							Assessment procedures					
	0	1	2	3	4	5	6	7	8	9	10	11	12
Establishment of data base													
Limitation of use													
Limitation of deployment													
Limitation of testing													
Limitation of possession													
Limitation of production													
Limitation of transfer													
Prohibition of use													
Prohibition of deployment													
Prohibition of testing													
Prohibition of possession													
Prohibition of production													
Prohibition of transfer													
Destruction													

0 = No method; 1 = National Technical Means; 2 = Exchange of data; 3 = Consultation; 4 = Control Posts/Observation; 5 = On-site inspection on a State territory; 6 = On-site inspection on a non-State territory; 7 = IAEA Safeguards; 8 = Review Conference; 9 = Submission of report; 10 = Consultation; 11 = Referral to an international organization; 12 = Referral to the International Court of Justice.

For further explanation see also pages 159 and 32-34.

Explanatory note on Table 1

The Treaty prohibits the use, deployment, testing, possession, production and transfer of nuclear weapons in a defined territory.

At the time of signature of the Treaty no nuclear weapons had been introduced or were being deployed in Latin America.

Through Additional Protocol I and II the States having responsibility for territories in the zone engage to respect the statute of denuclearization of the zone and not to use or threaten to use nuclear weapons against the contracting parties of the treaty.

The transfer prohibition applies not only to Non Nuclear Weapon States, but also to the Nuclear Weapon States who have signed additional Protocols I and II.

Factfinding methods

The exchange of data is provided for in Articles XIV and XV. The exchange of data follows a regular procedure (i.e. submission of semi-annual reports (Article XIV)). A special exchange of data may be requested by the Secretary-General of OPANAL (Article V). The regular exchange of data is from all contracting parties to OPANAL and IAEA and if so desired to the OAS (see Article XIV). The special exchange of data goes through the Secretary-General of the Agency.

Consultation is provided for in Article VII, which establishes the Agency for the Prohibition of Nuclear Weapons in Latin America (OPANAL). Consultation is carried out through the different bodies of the Agency, in particular the General Conference and the Council.

Challenge on-site inspection is provided for in Article XVI. It shall be undertaken by the Council of OPANAL.

Article XIII provides for the negotiation of agreements with the IAEA for the application of safeguards to the nuclear activities of the contracting parties. The safeguard agreements apply to nuclear reactors, reprocessing, conversion and fuel fabrication plants. Safeguard agreements are designed to verify non diversion (i.e. the production prohibition).

Assessment procedures

Articles XIV and XV provide for the exchange of reports. Article XVI paragraph 5, provides for the submission of reports resulting from special inspections.

Consultation is provided for in Article VII paragraph 2. Article XVI paragraph 7 provides for the convening of a special session of the General Conference for the purpose of considering the reports resulting from any special inspection.

Referral to the ICJ is optional in case of disagreements concerning the interpretation or application of the Treaty.

Reactions in case of non-compliance are stipulated in Article XX and consist *inter alia* of referral to the UN Security Council, the UN General Assembly, the Organization of American States and the IAEA.

The Relevant Treaty Articles

TREATY FOR THE PROHIBITION OF NUCLEAR WEAPONS IN LATIN AMERICA TREATY OF TLATELOLCO (14 FEBRUARY 1967, MEXICO)

ARTICLE I - OBLIGATIONS

1. The Contracting Parties hereby 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, 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.

2. The Contracting Parties also undertake to refrain from engaging in, encouraging or authorizing, directly or indirectly, or in any way participating in the testing, use, manufacture, production, possession or control of any nuclear weapon.

(...)

ARTICLE IV - ZONE OF APPLICATION

1. The zone of application of this Treaty is the whole of the territories for which the Treaty is in force.

2. 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 (except the continental part of the territory of the United States of America and its territorial waters): starting at a point located at 35° north latitude, 75° west longitude; from this point directly southward to a point at 30° north latitude, 75° west longitude; from there, directly eastward to a point at 30° north latitude, 50° west longitude; from there, along a loxodromic line to a point at 5° north latitude, 20° west longitude; from there directly westward to a point at 60° south latitude,

115° west longitude; from there, along a loxodromic line to a point at 35° north latitude, 150° west longitude; from there, directly eastward to a point at 35° north latitude, 75° west longitude.

(...)

ARTICLE VII - ORGANIZATION

(1) In order to assure compliance with the obligations of this Treaty, the Contracting Parties hereby establish an international organization to be known as the Agency for the Prohibition of Nuclear Weapons in Latin America, hereinafter referred to as "the Agency". Only the Contracting Parties shall be affected by its decisions.

(2) The Agency shall be responsible for the holding of periodic or extraordinary consultations among Member States on matters relating to the purposes, measures and procedures set forth in this Treaty and to the supervision of compliance with the obligations arising therefrom.

(3) The Contracting Parties agree to extend to the Agency full and prompt co-operation in accordance with the provisions of this Treaty, of any agreements they may conclude with the Agency and of any agreements the Agency may conclude with any other international organization or body.

(4) The headquarters of the Agency shall be in Mexico City.

(...)

ARTICLE XI - THE SECRETARIAT

(...)

(3) In addition to the functions conferred upon him by this Treaty and to those which may be assigned to him by the General Conference, the General Secretary shall ensure, as provided by Article 10 paragraph 5, the proper operation of the control system established by this Treaty, in accordance with the provisions of the Treaty and the decisions taken by the General Conference.

(...)

ARTICLE XII - CONTROL SYSTEM

(1) For the purpose of verifying compliance with the obligations entered into by the Contracting Parties in accordance with Article 1, a control system shall be established which shall be put into effect in accordance with the provisions of Articles 13 - 18 of this Treaty.

(2) The control system shall be used in particular for the purpose of verifying

(a) That devices, services and facilities intended for peaceful uses for nuclear energy are not used in the testing or manufacture of nuclear weapons;

(b) That none of the activities prohibited in Article 1 of this Treaty are carried out in the territory of the Contracting Parties with nuclear materials or weapons introduced from abroad, and

(c) That explosions for peaceful purposes are compatible with Article 18 of this Treaty.

ARTICLE XIII - IAEA SAFEGUARDS

Each Contracting Party shall negotiate multilateral or bilateral agreements with the International Atomic Energy Agency for the application of its safeguards to its nuclear activities. Each Contracting Party shall initiate negotiations within a period of 180 days after the date of the deposit of its instrument of ratification of this Treaty. These agreements shall enter into force, for each Party, not later than eighteen months after the date of the deposit of its instrument of ratification of this Treaty. These agreements shall enter into force, for each Party, not later than eighteen months after the date of the initiation of such negotiations except in case of unforeseen circumstances or *force majeure*.

ARTICLE XIV - REPORTS OF THE PARTIES

(1) The Contracting Parties shall submit to the Agency and to the International Atomic Energy Agency, for their information, semi-annual reports stating that no activity prohibited under this Treaty has occurred in their respective territories.

(2) The Contracting Parties shall simultaneously transmit to the Agency a copy of any report they may submit to the International Atomic Energy Agency which relates to the matters that are subject of this Treaty and to the application of safeguards.

(3) The Contracting Parties shall also transmit to the Organization of American States, for its information, any reports that may be of interest to it, in accordance with the obligations established by the Inter-American System.

ARTICLE XV - SPECIAL REPORTS REQUESTED BY THE GENERAL SECRETARY

(1) With the authorization of the Council, the General Secretary may request any of the Contract-

ing Parties to provide the Agency with complementary or supplementary information regarding any event or circumstance connected with compliance with this Treaty, explaining his reasons. The Contracting Parties undertake to co-operate promptly and fully with the General Secretary.

(2) The General Secretary shall inform the Council and the Contracting Parties forthwith of such requests and of the respective replies.

ARTICLE XVI - SPECIAL INSPECTIONS

(1) The International Atomic Energy Agency and the Council established by this Treaty have the power of carrying out special inspections in the following cases:

(a) In the case of the International Atomic Energy Agency, in accordance with the agreements referred to in Article 13 of this Treaty;

(b) In the case of the Council:

(i) When so requested, the reasons for the request being stated, by any Party which suspects that some activity prohibited by this Treaty has been carried out or is about to be carried out, either in the territory of any other party or in any other place on such latter Party's behalf, the Council shall immediately arrange for such an inspection in accordance with Article 10, paragraph 5;

(ii) When requested by any Party which has been suspected of or charged with having violated this Treaty, the Council shall immediately arrange for the special inspection requested in accordance with Article 10, paragraph 5. The above requests will be made to the Council through the General Secretary.

(2) The costs and expenses of any special inspection carried out under paragraph 1, subparagraph (b), sections (i) and (ii) of this Article shall be borne by the requesting Party or Parties, except where the Council concludes on the basis of the report of the special inspection that, in view of the circumstances existing in the case, such costs and expenses should be borne by the Agency.

(3) The General Conference shall formulate the procedures for the organization and the execution of the special inspections carried out in accordance with paragraph 1, subparagraph (b), sections (i) and (ii) of this Article.

(4) The Contracting Parties undertake to grant the inspectors carrying out such special inspections full and free access to all places and all information which may be necessary for the per-

formance of their duties and which are directly and intimately connected with the suspicion of violation of this Treaty. If so requested by the authorities of the Contracting Party in whose territory the inspection is carried out, the inspectors designated by the General Conference shall be accompanied by representatives of said authorities, provided that this does not in any way delay or hinder the work of the inspectors.

(5) The Council shall immediately transmit to all the Parties, through the General Secretary, a copy of any report, resulting from special inspections.

(6) Similarly, the Council shall send through the General Secretary to the Secretary-General of the United Nations, for the transmission to the United Nations Security Council and General Assembly, and to the Council of the Organization of American States, for its information, a copy of any report resulting from any special inspection carried out in accordance with paragraph 1, sub-paragraph (b), sections (i) and (ii) of this Article.

(7) The Council may decide, or any Contracting Party may request, the convening of a special session of the General Conference for the purpose of considering the reports resulting from any special inspection. In such a case, the General Secretary shall take immediate steps to convene the special session requested.

(8) The General Conference, convened in special session under this article, may make recommendations to the Contracting Parties to be transmitted to the United Nations Security Council and the General Assembly.

(...)

ARTICLE XX - MEASURES IN THE EVENT OF VIOLATION OF THE TREATY

(1) The General Conference shall take note of all cases in which, in its opinion, any Contracting Party is not complying fully with its obligations under this Treaty and shall draw the matter to the attention of the Party concerned, making such recommendations as it deems appropriate.

(2) If, in its opinion, such non-compliance constitutes a violation of this Treaty which might endanger peace and security, the General Conference shall report thereon simultaneously to the United Nations Security Council and the General

Assembly through the Secretary-General of the United Nations, and to the Council of the Organization of American States. The General Conference shall likewise report to the International Atomic Energy Agency for such purposes as are relevant in accordance with its Statute.

(...)

ARTICLE XXIV - SETTLEMENT OF DISPUTES

Unless the Parties concerned agree on another mode of peaceful settlement, any question or dispute concerning the interpretation or application of this Treaty which is not settled shall be referred to the International Court of Justice with prior consent of the Parties to the controversy.

(...)

ARTICLE XXX - DURATION AND DENUNCIATION

(1) This Treaty shall be of a permanent nature and shall remain in force indefinitely, but any Party may denounce it by notifying the General Secretary of the Agency if, in the opinion of the denouncing State, there have arisen or may arise circumstances connected with the content of this Treaty or the annexed Additional Protocols I and II which affect its supreme interests or the peace and security of one or more Contracting Parties.

(2) The denunciation shall take effect three months after the delivery to the General Secretary of the Agency of the notification by the Government of the signatory State concerned. The General Secretary shall immediately communicate such notification to the other Contracting Parties and to the Secretary-General of the United Nations and the General Assembly. He shall also communicate it to the Secretary-General of the Organization of American States.

The undersigned Plenipotentiaries, furnished with full powers by their respective Governments, have agreed as follows:

ADDITIONAL PROTOCOL I ARTICLE 1

To undertake to apply the statute of denuclearization in respect of warlike purposes as defined in Articles 1, 3, 5 and 13 of the Treaty for the Prohi-

bition of Nuclear Weapons in Latin America in territories for which *de jure* or *de facto*, they are internationally responsible and which lie within the limits of the geographical zone established in that Treaty.

ADDITIONAL PROTOCOL II

ARTICLE 1

The statute of denuclearization of Latin America in respect of warlike purposes, as defined, delimited and set forth in the Treaty for the Prohibition of Nuclear Weapons in Latin America of which this instrument is an annex, shall be fully respected by the Parties to this Protocol in all its express aims and provisions.

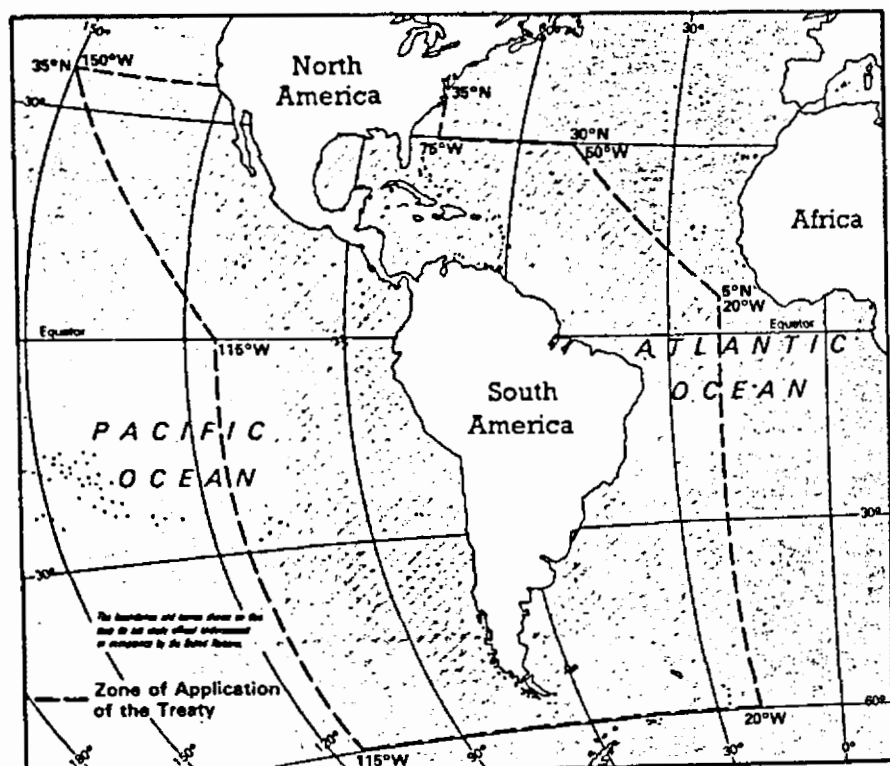
ARTICLE 2

The Governments represented by the undersigned Plenipotentiaries undertake, therefore 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 in accordance with Article 4 thereof.

ARTICLE 3

The Governments represented by the undersigned Plenipotentiaries also undertake not to use or threaten to use nuclear weapons against the Contracting Parties of the Treaty for the Prohibition of Nuclear Weapons in Latin America.

Zone of Application of the Treaty of Tlatelolco



MAP NO. 2229.7 UNITED NATIONS
SEPTEMBER 1985

Notes:

1. The maritime limits indicated above are not yet in force, but the map shows the zone of application that the Treaty will cover if/when it enters fully into force.
2. The continental part of the territory of the United States of America and its territorial waters are specifically excluded from the zone of application.

Source: *Report of the Secretary-General, The Naval Arms Race*, UN-Document A/40/535, 1985, also published by UN DDA, Study Series 16, 1986, New York.

List of Parties

**Treaty for the Prohibition of Nuclear Weapons
in Latin America
(as of 31 July 1990)**

Country	1.	2.	Country	1.	2.
Antigua and Barbuda	1983	1990*	Honduras	1968	1975
Bahamas	1977		Jamaica	1969	1978
Barbados	1969		Mexico	1967	1973
Bolivia	1969	1974*	Nicaragua	1968	1976
Colombia	1972	1982	Panama	1971	1984
Costa Rica	1969	1979	Paraguay	1969	1979
Dominican Republic	1968	1973	Peru	1969	1979
Ecuador	1969	1975	Suriname	1977	1979
El Salvador	1968	1975	Trinidad and Tobago	1975	
Grenada	1975		Uruguay	1968	1976
Guatemala	1970	1982	Venezuela	1970	1982
Haiti	1969	1975*			

1. Date of becoming a Party to the Treaty of Tlatelolco.

2. Safeguards agreement with the IAEA.

* Signed.

Have ratified additional Protocols to the Treaty	
China	1974 (P2)
France	1974 (P1:S/P2:1974)
Netherlands	1971 (P1:1971/SA-1975)
Union of Soviet Socialist Republics	1979 (P2:1979)
United Kingdom	1969 (P1+P2:1969)
United States of America	1971 (P1:1981/P2:1971/SA-1989)

S means that the Treaty was signed, but no further action has been taken.

P means Protocol to the Treaty.

SA means IAEA Nuclear Safeguards Agreement in force as required by the Treaty.

Chapter 6

The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) (1968)

Adolf von Baeckmann

I - Introduction

The Treaty on the Non-Proliferation of Nuclear Weapons (NPT) was opened for signature on 1 July 1968 and entered into force on 5 March 1970.¹ The Treaty was agreed upon in consideration of the devastation that would impact upon all mankind as a result of nuclear war and is based on the belief that the proliferation of nuclear weapons would seriously enhance the danger of nuclear war. In the terms of the Treaty, the States Parties agree to far-reaching undertakings with respect to the non-proliferation of nuclear weapons, the application of IAEA safeguards to nuclear material in peaceful nuclear uses, international co-operation in the field of peaceful utilization of nuclear energy, the availability of potential benefits of peaceful applications of nuclear explosions, and effective measures towards the cessation of the nuclear arms race and complete disarmament. At the end of 1989 137 non-nuclear-weapon States and three nuclear-weapon States adhered to the Treaty.

Although the word "verification" occurs only once (in Art. II.1) in the NPT, the principle of international verification has been introduced into the text of the Treaty in several places through the use of the words "safeguards" (preamble and Art. III), "appropriate international observation" (Art. V) and "effective international control" (preamble and Art. VI).

During the late 1970s the potential for the peaceful application of nuclear explosions in non-nuclear-weapon States, including the procedures for "appropriate international observation", was studied intensively; however, it was concluded that for the time being the potential benefits of the peaceful application of nuclear explosions had not been demonstrated.² As a result further discussion of the peaceful application of nuclear explosions in non-nuclear-weapon States was postponed. Also progress towards a cessation of the nuclear arms race, towards nuclear disarmament and towards a treaty on general and complete disarmament "under strict and effective international control" (as envisaged in Article VI) has been limited, and no general comprehensive international verification system has emerged for such international control.

¹ Treaty on the Non-Proliferation of Nuclear Weapons, INFCIRC/140, IAEA, Vienna 1970. For a complete numerical list of information circulars (INFCIRCs) see INFCIRC/1/Rev. 9, IAEA, Vienna 1988.

² Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, Final Document, Geneva 1985, NPT/CONF.III/64/1, annex 1, page 10, paragraph V, 3.

Consequently, the application of IAEA safeguards, aiming to verify the fulfilment of certain obligations assumed by the Parties to the Treaty under Article III, is the only established verification system under the Treaty, whereas the fulfilment of other obligations assumed under the Treaty remains unverified or even unverifiable.

However, it must not be overlooked that, at intervals of five years, conferences of all Parties to the Treaty are held in order to review its operation. At these occasions States Party to the Treaty have the opportunity to discuss the conclusions from their assessments with respect to the compliance of other Parties. In addition some States Parties to the Treaty have jointly published their understanding of the obligations on nuclear exports under Article III, 2 of the Treaty (INFCIRC/209).

II - The IAEA Safeguards System

The Treaty stipulates (Art. III, 1) that each non-nuclear-weapon State Party to the Treaty undertakes to accept safeguards, as set forth in an agreement to be negotiated and concluded with the International Atomic Energy Agency (IAEA) in accordance with the Statute of the IAEA³ and the Agency's safeguards system. This is exclusively to verify the fulfilment of the State's obligations assumed under the NPT with a view to preventing diversion of nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices.

The safeguards system of the IAEA is based on the perception that the promotion of the use of nuclear energy for peaceful purposes and international co-operation in this field would only be publicly acceptable if accompanied by an undertaking to use nuclear energy for peaceful purposes only, and that such an undertaking would require verification through an international organization. It is also based on the assumption that the risk of proliferation under a regime of free international co-operation in the field of peaceful utilization of nuclear energy, combined with effective international safeguards, would be lower than under a regime of secrecy and denial.

The Statute of the IAEA,⁴ as approved on 23 October 1956, describes the objectives of the IAEA as:

The Agency shall seek 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 (Art. II).

In Art. III.A.5 of the Statute the IAEA is authorized:

... to establish and administer safeguards designed to ensure that special fissionable and other materials, services, equipment, facilities, and information made available by the Agency or at its request or under its supervision or control are not used in such a way as

³ Statute of the IAEA, IAEA, Vienna.

⁴ Statute of the IAEA, IAEA, Vienna.

to further any military purpose, and to apply safeguards, at the request of the Parties, to any bilateral or multilateral arrangement, or at the request of a State, to any of that State's activities in the field of atomic energy.

In addition Art. III.B.2 states that in carrying out its functions, the Agency shall:

... establish control over the use of special fissionable material received by the Agency, in order to ensure that these materials are used only for peaceful purposes.

Finally Art. XII of the Statute defines Agency safeguards in more detail (full text of Art. XII of the Statute is given in annex 1).

Again, although the word "verification" is not used in the Statute, the verification functions are well described using terminology like "apply safeguards", "to send into the territory of the recipient State . . . inspectors . . . who shall have access at all times to all places and data and to any person who . . . deals with materials, equipment, or facilities which are required by this Statute to be safeguarded . . .".

On the basis of the Statute the IAEA safeguards system was established in the early 1960s and is described in IAEA documents INFCIRC/26⁵ and INFCIRC/66/Rev.2⁶ (full text given in annex 2). The revised and extended IAEA safeguards system as described in INFCIRC/66/Rev.2 is the basis for safeguards agreements concluded since 1968, except those concluded with States Party to the NPT or to the Treaty for the Prohibition of Nuclear Weapons in Latin America (Tlatelolco Treaty); the safeguards agreements with nuclear-weapon States; and the safeguards agreement concluded with Albania (INFCIRC/359).

When the NPT was drafted it became clear that a safeguards system on the basis of INFCIRC/66/Rev.2 would not meet the terminology and other requirements of the NPT.⁷ A modified safeguards model agreement was therefore developed and negotiated by the Safeguards Committee of the IAEA Board of Governors. The text of this safeguards model agreement was published in INFCIRC/153⁸ (corrected) in 1972 (full text given in annex 3). All safeguards agreements concluded with non-nuclear-weapon States Party to the NPT follow very closely the wording of the INFCIRC/153 model.

The safeguards agreements concluded with nuclear-weapon States on the basis of voluntary offers⁹ follow to the greatest extent possible the wording of INFCIRC/153. However major modifications have been made not only to reflect the different

⁵ The Agency's Safeguards System, INFCIRC/26 and INFCIRC/26/Add.1, IAEA, Vienna 1961/1964.

⁶ The Agency's Safeguards System, INFCIRC/66/Rev.2, IAEA, Vienna 1986.

⁷ There appears however to be an international consensus that INFCIRC/66-type agreements fulfil the requirements of Art. III.2 of the NPT (see INFCIRC/209). Therefore IAEA verification measures under INFCIRC/66-type safeguards agreements are included in this article.

⁸ The Structure and Content of Agreements between the Agency and States Required in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons, INFCIRC/153 (Corrected), IAEA, Vienna 1972.

⁹ For UK see INFCIRC/263, (1987), for US see INFCIRC/288 (1981), for France see INFCIRC/290 (1981), for USSR see INFCIRC/327 (1985), and for China see INFCIRC/369 (1989).

objections, but also to provide for the individual requirements of the contracting State (for instance, China and France are not Party to the NPT).

Nearly all States which are Party to the Tlatelolco Treaty are also Party to the NPT and have concluded a INFCIRC/153-type agreement. Only Colombia, which was Party to the Tlatelolco Treaty but not to the NPT at the time the safeguards agreement was negotiated, has concluded a Tlatelolco Treaty - specific safeguards agreement which follows to a large extent the INFCIRC/153 wording and principles (INFCIRC/306). However, other South American States which are not Party to the NPT but are considering adherence to the Tlatelolco Treaty have repeatedly stated that a more Tlatelolco Treaty-specific safeguards model agreement was needed and that the Colombian agreement does not fully meet the requirements and understandings of the Tlatelolco Treaty. In 1988 a "full-scope" safeguards agreement with Albania (INFCIRC/359) entered into force which is not linked to the NPT or any other treaty. Although the Agreement follows to a large extent the wording and concepts of the INFCIRC/153 model, it has been substantially modified to reflect the fact that Albania does not adhere to the NPT.

The present safeguards system of the IAEA is the result, *inter alia*, of more than 25 years of safeguards implementation experience, permanent consultations with Member States, discussions in the IAEA Board of Governors and directives received from it, and advice obtained from the Standing Advisory Group on Safeguards Implementation (SAGSI) or other advisory group meetings and consultants' meetings. It reflects the expertise of the IAEA safeguards management and staff, as well as of other safeguards experts in Member States, technological developments in the field of the peaceful utilization of nuclear energy and the political will of IAEA Member States.

INFCIRC/66-TYPE SAFEGUARDS AGREEMENTS

The INFCIRC/66 safeguards agreements are based on the concept of applying IAEA safeguards to nuclear material or items listed in an inventory. Usually this inventory lists only materials and items imported from a supplier State, nuclear material which has been produced, processed or used in any of the listed facilities, or equipment or (non-nuclear) materials which have been designed, constructed or operated on the basis of, or by the use of, relevant technological information provided by the supplier State.

Under the INFCIRC/66-type agreements, the contracting Governments undertake not to use any of the items listed in the inventory "to further any military purpose". In more recent INFCIRC/66-type agreements this undertaking has been modified so that none of the items listed in the inventory can be used "for the manufacture of any nuclear weapons or to further any other military purpose or for the manufacture of any other nuclear explosive device". This is to make clear that the production of any nuclear explosive device - including devices for peaceful nuclear explosions - is considered by IAEA Member States as furthering a military purpose.

It must be noted that INFCIRC/66 only gives general guidance for the safeguards agreements to be concluded. There are rather significant differences between individual agreements, and in order to determine the Agency's rights and obligations under such agreements, it is necessary to examine each one individually. The following text can therefore only give a general description; the details are not necessarily applicable to all INFCIRC/66-type agreements.

Agency verification activities under INFCIRC/66-type agreements focus on such nuclear material as is listed in the inventories. This is usually only a fraction of the total nuclear material used in peaceful nuclear activities in the State. There may be a number of INFCIRC/66-type safeguards agreements between the Agency and a particular State, while the same nuclear material might be included in the inventories of a State in accordance with several agreements.

Through a system of records and reports for its nuclear materials the State establishes the basis for the verification activities of the Agency. The safeguards procedures to be applied are described in part III of INFCIRC/66. They include design review, record and report requirements and inspections. On-site inspection is the main verification tool within the Agency's safeguards system. The purpose of inspections is defined as "to verify compliance with safeguards agreements and to assist States in complying with such agreements and in resolving any questions arising out of the implementation of safeguards". Nuclear material accountancy is the basis of inspection activities. INFCIRC/66 provides for a number of possibilities for exemptions, suspensions and terminations of safeguards on nuclear material otherwise subject to safeguards.

One of the most important features of INFCIRC/66-type agreements is the possibility of substituting an equivalent amount of nuclear material of equal "strategic value" for any quantity of nuclear material otherwise subject to safeguards, a principle which on the one hand can help to reduce the inspection effort (e.g. by applying safeguards to a storage facility rather than to a reprocessing plant) but on the other hand may undermine the purpose of the safeguards agreement (i.e. to prevent a certain batch of nuclear material from being used in a military activity). Moreover, in INFCIRC/66-type agreements Agency access rights are usually more restricted than originally foreseen in Art. XII of the Statutes. In particular, for facilities with an inventory of less than 5 effective kilograms of nuclear material, IAEA inspector access might be limited to one inspection per year.

In addition to nuclear material verification, IAEA inspectors may also verify that nuclear facilities, specified equipment and specified materials are not used in such a way as to further any military purpose. Whereas the procedures for verification of the correctness of reports and records on nuclear materials are rather well established, it must be noted that the procedures regarding facilities, specified equipment and specified materials - with the exception of the procedures to be applied on heavy water - are less well defined and developed.

INFCIRC/66 gives special procedures for reactors, nuclear material outside principal nuclear facilities, for reprocessing plants and for conversion and fabrication

plants. The IAEA Board of Governors has not yet established procedures for enrichment plants - but there is only one very small enrichment plant under INFCIRC/66 safeguards. The Annex of INFCIRC/296 gives the safeguards procedures for heavy water production plants, major components and heavy water listed in the inventory. Whereas INFCIRC/66 makes no reference to subsidiary arrangements, facility attachments and the use of containment and surveillance measures, more recent INFCIRC/66-type agreements do contain such references and usually require the negotiation of subsidiary arrangements concerning the implementation of safeguards procedures.

Some recent INFCIRC/66-type safeguards agreements require that the contracting Government take all the measures necessary for the physical protection of all items subject to the agreement, taking into consideration the recommendations of the Agency with regard to such measures (for example INFCIRC/350, section 25). The Agency has published recommendations on the physical protection of nuclear materials in INFCIRC/225/Rev.1 which was recently revised and extended (INFCIRC/225/Rev.2).¹⁰ In addition, the question of physical protection of nuclear material has been addressed in the form of "The Convention on the Physical Protection of Nuclear Materials" which was opened for signature on 3 March 1980. In the Convention (INFCIRC/274/Rev.1)¹¹ the Parties agree, *inter alia*, to the application of physical protection to nuclear material in transit, international co-operation in the protection and recovery of nuclear material and to establishing the legal basis for making theft, robbery or any other unlawful removal of nuclear material a punishable offence. The Convention entered into force on 8 February 1989 after 21 States had ratified it. Neither the recommendations nor the Convention gives the Agency any right or obligation of inspection or verification in connection with physical protection measures. In INFCIRC/225/Rev.1 it is stated that "the Agency may informally advise the State on results of observations made during its normal safeguards activities". The Agency will provide further assistance only when so requested by the State.

INFCIRC/66-type agreements do not require a general non-proliferation undertaking by the contracting State; IAEA safeguards under INFCIRC/66-type agreements are therefore not directly related to the non-proliferation of nuclear weapons.

INFCIRC/153-TYPE SAFEGUARDS AGREEMENTS

INFCIRC/153-type agreements differ from the INFCIRC/66-type agreements by the fact that they require the application of IAEA safeguards "on all source or special fissionable material in all peaceful nuclear activities" within the territory of the State, etc. (full-scope safeguards). Consequently there is no substitution possibility under

¹⁰ The Physical Protection of Nuclear Material, INFCIRC/225/Rev.1 (1977) and Rev.2 (1989).

¹¹ The Convention on the Physical Protection of Nuclear Material, IAEA, INFCIRC/274/Rev.1 (1980) and entry into force INFCIRC/274/Rev.1/Add.1 (1987).

INFCIRC/153-type agreements. In addition, the purpose of IAEA safeguards under INFCIRC/153 agreements is to verify "that such material is not diverted to nuclear weapons or other nuclear explosive devices". The use of nuclear material which is required to be safeguarded in a non-proscribed (i.e. non-explosive) military activity is however possible under INFCIRC/153-type agreements (Art. 14). To date this Article has never been invoked. Since the conclusion of an INFCIRC/153-type agreement is linked to the adherence of the contracting State to the NPT, INFCIRC/153 safeguards can legitimately be called "non-proliferation safeguards".

INFCIRC/153, which is entitled "The Structure and Content of Agreements between the Agency and States Required in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons", was the result of lengthy deliberations in the safeguards committee of the IAEA Board of Governors in 1970 and 1971 and contains many compromises reflecting the divergent requirements of IAEA Member States. It should not be seen as the description of an ideal non-proliferation safeguards system providing for absolute assurance, but rather as the best achievable compromise between the requirements of international assurance on the one hand and the requirements of national sovereignty, security and economy on the other. Although the NPT requires that any non-nuclear-weapon State Party to the Treaty within a specified period should negotiate and conclude with the IAEA a safeguards agreement, 51 non-nuclear-weapon States Party to the Treaty had not done so by 31 December 1989. Although only three of these States were known to pursue significant nuclear activities - which were all covered by other safeguards agreements - the non-conclusion of the required safeguards agreement may undermine the authority of the Treaty.

In INFCIRC/153 the verification rights and obligations of the IAEA are well defined and described. The scope of IAEA safeguards is limited to "the terms of the Agreement" and to "all source or special fissionable material in all peaceful nuclear activities" (Arts. 1 and 2). The safeguards activities are based on the findings of the State's system of accounting for and control of all nuclear material subject to safeguards under the Agreement (Art. 7) and the information provided to the Agency.

There are significant restrictions on the Agency's safeguards system defined in INFCIRC/153: IAEA inspectors require the consent of the State to which they are designated (paragraphs 9 and 85). The safeguards activities shall be implemented in a manner designed "to avoid hampering the economic and technological development of the State or international co-operation in the field of peaceful nuclear activities, to avoid undue interference in the State's peaceful nuclear activities and to be consistent with prudent management practices required for the economic and safe conduct of nuclear activities" (paragraph 4). On-site inspections are limited with respect to their purpose, their scope, access rights of inspectors, frequency and intensity (paragraphs 70-82). IAEA inspectors have no right to search for undeclared facilities, and challenge inspections are not explicitly foreseen. In addition advanced notice has to be given for most routine inspections although the Agency has the right to carry out without advance notification an (undefined) portion of the routine inspections in accordance with the principle of random sampling (paragraph 84). And finally the

State has the right to have inspectors accompanied during their inspections (paragraph 89).

Two INFCIRC/153-type agreements (INFCIRC/193 and 255) have additional protocols attached to them which amplify certain provisions of the Agreements, in particular specifying the conditions and means according to which co-operation in the application of safeguards shall be implemented; that is, in such a way as to avoid unnecessary duplication of the national or the European Community's safeguards activities (Art. 1).

In order to facilitate the application of safeguards in a State, subsidiary arrangements are concluded which specify in detail "how the procedures laid down in the Agreement are to be applied" (paragraph 39). Subsidiary arrangements usually consist of a general part, describing those details which are applicable to all facilities in the State and general provisions; then, for each facility, an individually negotiated and concluded "facility attachment" describing the relevant details of safeguards implementation. The Agency has developed model texts for the subsidiary arrangements which are used as the basis for negotiations. These model subsidiary arrangements have been developed for all major facility categories on the basis of safeguards concepts and criteria, goals, diversion analyses and implementation practices. Although paragraph 40 stipulates the early conclusion of subsidiary arrangements (including facility attachments), the negotiation of such arrangements has often turned out to be a lengthy process. In some cases facility attachments have been outstanding for many years. In those cases the verification activities (inspections) are performed in the form of *ad hoc* inspections with extended access rights (paragraph 76 a and b).

The INFCIRC/153 safeguards system is based on nuclear material accountancy as a safeguards measure of fundamental importance, with containment and surveillance as important complementary measures (paragraph 29). Material balances are established at least annually for individual material balance areas (usually a facility may have one or more such areas - small facilities and outlying locations may be combined into a "catch-all" material balance area). Material balances include the beginning physical inventory, the ending physical inventory, shipments and receipts and other inventory changes like nuclear loss and production, the measures of discards, transfer to and from retained waste, exemption and de-exemption, accidental losses or gains, etc.

The material balances and the inventories are established by the plant operators or the State's system of accounting and control, and verified by IAEA inspectors. In practice this verification is performed by checking the presence of the material listed in the physical inventory listings (PILs), or the correctness of the information contained in inventory change reports (ICRs). Depending on the category of the material and its physical form, the material is verified by sampling and chemical analysis, non-destructive analysis, item identification and item counting. After verification, material might be kept under containment/surveillance (for example in a sealed container), thereby reducing the need for reverification. The verification activities of the IAEA

inspector aim at a 90 to 95 per cent assurance that a significant quantity of nuclear material has not been diverted from IAEA safeguards. Statistical sampling plans are applied and material balances are closed at least once a year. The measurement results are analysed for shipper/receiver differences, uncertainties of material unaccounted for (MUF) figures, and significant differences between operator and inspector measurements. Any anomaly detected during an inspection or during the subsequent evaluation of inspection results is investigated until resolved.

If an anomaly remains unresolved and the Director-General finds that the Agency therefore is unable to verify that there has been no diversion of nuclear material (required to be safeguarded under the Agreement), to nuclear weapons or other nuclear explosive devices, he will report to the IAEA Board of Governors. The Board would then call upon the State to take the required (corrective) action without delay. If the Board is not satisfied with the reassurances furnished by the State involved or with the results of the corrective actions, it may report such non-compliance to all Members of the IAEA and to the Security Council and the General Assembly of the United Nations; it may curtail or suspend any assistance being provided by the Agency or by a Member, and may call for the return of materials and equipment made available to the State. The Agency may also suspend any non-complying Member from exercising its privileges and rights of membership (paragraphs 18 and 19 and Art. XII C of the Statutes). In practice the consequences of a statement by the IAEA Board of Governors that a State was not complying with its safeguards obligations can be expected to be far more serious. Suspension of any international co-operation in the peaceful utilization of nuclear energy, embargoes and other economic and political disadvantages might by far outweigh the consequences related to suspension of IAEA membership. Until now the Director-General has made such a report to the IAEA Board of Governors in only very few cases. The corrective actions taken upon such reports have always made it unnecessary for the Board to pursue the issue further. In addition the Director-General describes the IAEA safeguards experiences and results in his "Annual Reports"¹² and in the Safeguards Implementation Report (SIR) presented to the Board of Governors and Member States annually. In accordance with the requirements of paragraph 5 of INFCIRC/153, this report has been restricted to "official use (by the Member States) only". The possibility of making the report publicly available is under discussion.

Since the application of IAEA safeguards in nuclear-weapon States is not a requirement of the NPT, it cannot be the subject of this Article. For a more complete picture, interested readers are referred to a separate publication.¹³ It must however be noted that the extension of IAEA safeguards to all peaceful nuclear activities in all States, including the nuclear-weapon States - as has been suggested in the 1987 IAEA General Conference (Swedish Statement) - could be an important contribution to any

¹² *The Annual Report for 1989*, IAEA, Vienna (1990), GC (XXXIV)/915.

¹³ A. von Baeckmann, "IAEA Safeguards in Nuclear Weapon States", *IAEA Bulletin*, 1/1988, IAEA, Vienna, pp. 22-25.

cut-off agreement by which the production of nuclear material for nuclear warheads would be terminated or at least reduced.

As of 31 December 1989 there were 172 safeguards agreements in force with 101 States. IAEA safeguards were being applied in 42 States under agreements pursuant to NPT or NPT and the Tlatelolco Treaty, in one State pursuant to the Tlatelolco Treaty only, and in 11 States under agreements pursuant to INFCIRC/66/Rev.2. In addition IAEA safeguards were applied to some civil nuclear facilities in four nuclear-weapon States (the Agency also applies safeguards to nuclear materials and installations in Taiwan, China).

On 31 December 1989 there were 515 nuclear facilities, 405 locations outside facilities and two non-nuclear installations under safeguards or containing safeguards material. In total 13.6 tonnes of separated plutonium, 1.1 tonnes of recycled plutonium in reactor cores, 284.8 tonnes of plutonium contained in irradiated fuel, 10.8 tonnes of high enriched uranium, 33,833 tonnes of low enriched uranium, 57,134 tonnes of source material and 1,457 tonnes of heavy water were under safeguards.

In 1989, 2,196 inspections were performed by about 210 inspectors. About 13,500 seals were applied and 1,200 plutonium and uranium samples analyzed. The activities of the inspectors were supported by a very sophisticated safeguards information system; the development of new equipment, procedures and concepts (partially through safeguards support programmes in Member States); technical and administrative support activities; training, standardization, quality control and evaluation. In 1989 the Department of Safeguards employed about 270 Professional and about 200 General Service staff and spent about 50 million US dollars. In the Annual Report 1989¹⁴ the Agency reported to its Member States that "in 1989, as in previous years, the Secretariat, in carrying out the safeguards obligations of the Agency, did not detect any event which would indicate the diversion of a significant amount of safeguards nuclear material - or the misuse of facilities, equipment or non-nuclear material subject to safeguards - for the manufacture of any nuclear weapon, or for any other military purpose, or for the manufacture of any other nuclear explosive devices, or for purposes unknown It is considered reasonable to conclude that the nuclear material under Agency safeguards in 1989 remained in peaceful nuclear activities or was otherwise adequately accounted for. This Statement is based on all the information available to the Agency, including information derived from safeguards activities conducted in the field and at Headquarters and information provided in reports submitted by States".

RESULTS AND EXPERIENCE FROM IAEA SAFEGUARDS

A description of the safeguards (verification) system of the Agency would be incomplete without reference to the results and experience gained so far. Since its

¹⁴ *Comments on Recent Misleading Press Reports on the IAEA's Safeguards*, IAEA PR 88/24, 2 June 1988, Vienna.

implementation, no significant quantity of nuclear material has been detected and no nuclear explosion originating from nuclear material subject to IAEA safeguards has been observed. From this point of view, the result could not have been better. In fact, the assurances provided by IAEA safeguards have in many cases promoted international nuclear co-operation and have been recognized as an effective confidence-building tool, both in the NPT Review Conference and the United Nations General Assembly. On the other hand, safeguards effectiveness has been questioned in some cases, and in the media the system has been criticized as not sufficient. Indeed the system is not perfect and could be improved, provided that the States involved would be willing to increase their support.

The most significant weakness of the system is its incompleteness: the IAEA safeguards system has not achieved the degree of universal application required for an international verification system. States with major nuclear programmes have kept some of their peaceful nuclear activities outside the system, without obvious disadvantages resulting from such non-participation. To put it differently, those States that did accede to the NPT and complied with their obligations have not enjoyed sufficient advantages to encourage others to follow suit. On the contrary, the contributions made by the States that joined the NPT and accepted IAEA safeguards have often not been sufficiently recognized and their expectations not always fully met. The degree of incompleteness combined with unfulfilled expectations might threaten the continuation of the NPT and IAEA safeguards.

A second weakness is possibly the insufficiency of resources. This refers not only to the budget but also to the availability of qualified staff and most modern technologies. More than five years of practically zero-growth budget has used up all the reserves, and deterioration in the conditions of employment has become evident.

On the technical side it must be noted that the NPT and the IAEA safeguards systems were designed in the 1960s on the basis of the fuel cycle technology then in existence. This is not the technology always used in 1990 and adaptations are required. Unfortunately adapting the safeguards system to modern fuel cycle technologies cannot always be performed within the legal, political and administrative framework established in the 1960s; thus the NPT and its verification system may soon require reformulation.

Fortunately co-operation with those Member States accepting IAEA safeguards has always been good and has even improved over the years. Major concerns about commercial disadvantages caused by safeguards or possibilities of industrial espionage have disappeared. Usually the basis for good co-operation has been established; difficulties that occasionally occur in implementation are mainly linked to misunderstandings or conflicting national obligations. In this connection it must not be overlooked that the tightening of national regulations on radiation protection, handling of nuclear material and physical protection of nuclear facilities may also complicate the performance of inspection activities. Sometimes implementation problems arise from imbalances in the system and from the fact that the principle of reciprocity is not always observed.

As a third weakness one might consider the insufficient recognition which the IAEA safeguards system and its results have been accorded by the public, the media and political forums. Although the system is unique in accepting international control of peaceful nuclear activities in nearly all States which employ nuclear energy for peaceful purposes, the IAEA safeguards system has been devalued particularly in the media through the spreading of misinformation or one-sided descriptions of some weaknesses and shortcomings. Frequently it is not understood that, like any verification process, the IAEA safeguards system is the result of compromise between conflicting interests, accepted by a very large number of States. It is also not always appreciated that in developing the system many technical and political components had to be considered such as economy, safety, security, protection of sensitive information, reciprocity, universality, commercial imbalances and industrial innovations. In our present world the United Nations system and its organization have no executive functions; therefore the IAEA safeguards system cannot prevent any activity performed by the Government of a sovereign State or analyse its possible intentions. Instead it is limited to *post-factum* detection in cases where a substantial violation of an international commitment has occurred, or to the *post-factum* confirmation that such a violation has not occurred (verification).

In addition, the IAEA Safeguards Implementation Report (SIR), issued annually to the IAEA Board of Governors, has been repeatedly used for misleading press reports.¹⁵ The SIR, which is a restricted IAEA internal document, describes the implementation of IAEA safeguards and points out problems which the IAEA has encountered in this work. It is an important part of the process of evaluating and improving effectiveness and efficiency of the IAEA safeguards system.

The fact that certain problems exist does not mean that the system does not work; nor should the listing of problems be seen as a contradiction of the concluding Statement that the nuclear material under Agency safeguards was indeed confined to peaceful nuclear activities or was otherwise adequately accounted for. This Statement is based on the totality of information available to the Agency, including that which complements or substitutes for any insufficiencies reported in some parts of the SIR. Realizing that the SIR has been misunderstood, misinterpreted or misrepresented by people who are not conversant with the subject of international safeguards or who have an interest in casting doubt on the non-proliferation regime, the Agency has increased its efforts to make the SIR more understandable.

III - Conclusion and Outlook

In general one has to say, however, that the IAEA safeguards system is a well-established and mature international verification system with world-wide application. Both the IAEA and its Member States have learned to respect each other and to co-operate. The system can therefore be seen as a model for other international

¹⁵ NPT/CONF.III/64/1, pp. 3-6, 1985.

verification tasks. The verification activities of the IAEA and their results are regularly reviewed and commented on at NPT Review Conferences. In 1985, the third NPT Review Conference expressed the conviction that IAEA safeguards provide an assurance that States are complying with their undertakings and also assist States to demonstrate this compliance. The Conference urged all non-nuclear-weapon States not Party to the NPT to make an international legally binding commitment not to acquire nuclear weapons or other nuclear explosive devices and to accept IAEA safeguards over all their peaceful nuclear activities. The Conference expressed its satisfaction that four of the five nuclear-weapon States had voluntarily concluded safeguards agreements with the IAEA covering all or part of their peaceful nuclear activities.¹⁶ The Conference recommended further evaluation of the economic and practical possibilities of extending application of safeguards to additional civil facilities in the nuclear-weapon States. The Conference called on States Parties to the Treaty to assist IAEA in applying its safeguards, and to continue their political, technical and financial support of the IAEA safeguards system.¹⁷ The IAEA safeguards system has also been addressed and supported repeatedly by the United Nations General Assembly.

¹⁶ Subsequently the fifth nuclear-weapon State (China) has also concluded a similar agreement.

¹⁷ NPT/CONF.III/64/1, annex I, pp. 3-6, 1985.

Annexes

Select Bibliography

For a recent bibliography on the NPT see Jozef Goldblat, "Twenty Years of the Non-Proliferation Treaty", appendix XIII, International Peace Research Institute, Oslo, 1990. Detailed literature on the IAEA safeguards system can be found in the proceedings of IAEA safeguards symposia (IAEA, Vienna 1976, 1979, 1983 and 1987), in the *Journal of the Institute of Nuclear Materials Management* (INMM, USA) and in the proceedings of the annual symposia on safeguards and nuclear material management organized by the European Safeguards Research and Development Association (ESARDA, JRC Ispra, Italy). In addition the *IAEA Bulletin* from time to time issues numbers which focus on safeguards (e.g. Vol. 30, No. 1, 1988 and Vol. 32, No. 1, 1990). See also *UNIDIR Newsletter*, "Nuclear Non-Proliferation", Vol. 3, No. 3, 1990.

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Table 1: Procedures related to the Treaty on the Non-Proliferation of Nuclear Weapons of 1968**Main Treaty Provisions and Monitoring and Verification Methods**

	Factfinding							Assessment procedures					
	0	1	2	3	4	5	6	7	8	9	10	11	12
Establishment of data base													
Limitation of use													
Limitation of deployment													
Limitation of testing													
Limitation of possession													
Limitation of production													
Limitation of transfer													
Prohibition of use													
Prohibition of deployment													
Prohibition of testing													
<i>Prohibition of possession</i>													
<i>Prohibition of production</i>													
<i>Prohibition of transfer</i>													
Destruction													

0 = No method; 1 = National Technical Means; 2 = Exchange of data; 3 = Consultation; 4 = Control Posts/Observation; 5 = On-site inspection on a State territory; 6 = On-site inspection on a non-State territory; 7 = IAEA Safeguards; 8 = Review Conference; 9 = Submission of report; 10 = Consultation; 11 = Referral to an international organization; 12 = Referral to the International Court of Justice.

For further explanation see also pages 184 and 32-34.

Explanatory note on Table 1

Each Non-Nuclear-Weapon State Party to the Treaty undertakes not to receive nuclear weapons (or control such weapons), not to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices and not to seek or receive assistance in their production (Article II). Nuclear-Weapon States undertake not to transfer nuclear weapons or other nuclear explosive devices (or control over such weapons) to any recipient and not to assist Non-Nuclear-Weapon States to manufacture or acquire nuclear weapons or other nuclear explosive devices (Article I). The NPT hence sets forward a production and possession prohibition for Non-Nuclear-Weapon States and a transfer prohibition for Nuclear-Weapon States. The possession prohibition is implicit.

Factfinding methods

Article III provides for safeguard agreements with the IAEA. The method is mainly intended to verify that no diversion of nuclear material to the production of nuclear weapons or other explosive devices has taken place.

Assessment procedures

Article VIII provides for the holding of a review conference five years after entry into force of the treaty (see also Article X, paragraph 2) and at intervals of five years thereafter if so requested by a majority of the Parties to the Treaty.

The Relevant Treaty Articles

TREATY ON THE NON-PROLIFERATION OF NUCLEAR WEAPONS (1 JULY 1968, LONDON, MOSCOW AND WASHINGTON)

ARTICLE I

Each nuclear-weapon State Party to the Treaty undertakes not to transfer to any recipient whatsoever nuclear weapons or other nuclear explosive devices or control over such weapons or explosive devices directly, or indirectly; and not in any way to assist, encourage, or induce any non-nuclear-weapon State to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices, or control over such weapons or explosive devices.

ARTICLE II

Each non-nuclear-weapon State Party to the Treaty undertakes not to receive the transfer from any transferor whatsoever of nuclear weapons or other nuclear explosive devices or of control over such weapons or explosive devices directly, or indirectly; not to manufacture or otherwise acquire nuclear and not to seek or receive any assistance in the manufacture of nuclear weapons or other nuclear explosive devices.

ARTICLE III

(1) Each non-nuclear-weapon State Party to the Treaty undertakes to accept safeguards, as set forth in an agreement to be negotiated and concluded with the International Atomic Energy Agency in accordance with the Statute of the International Atomic Energy Agency and the Agency's safeguards system, for the exclusive purpose of verification of the fulfilment of its obligations assumed under this Treaty with a view to preventing diversion of nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices. Procedures for the safeguards required by this Article shall be followed with respect to source or special fissionable material whether it is being produced, processed or used in any principal nuclear facility or is outside any such facility. The safeguards required by this Article shall be applied on all source or special fissionable material in all peace-

ful nuclear activities within the territory of such State, under its jurisdiction, or carried out under its control anywhere.

(2) Each State Party to the Treaty undertakes not to provide:

(a) source or special fissionable material, or

(b) equipment or material especially designed for the processing, use or production of special fissionable material, to any non-nuclear-weapon State for peaceful purposes, unless the source or special fissionable material shall be subject to the safeguards required by this Article.

(3) The safeguards required by this Article shall be implemented in a manner designed to comply with Article 4 of this Treaty, and to avoid hampering the economic or technological development of the Parties or international co-operation in the field of peaceful nuclear activities, including the international exchange of nuclear material and equipment for the processing, use or production of nuclear material for peaceful purposes in accordance with the provisions of this Article and the principle of safeguarding set forth in the Preamble of the Treaty.

(4) Non-nuclear-weapon States Party to the Treaty shall conclude agreements with the International Atomic Energy Agency to meet the requirements of this Article either individually or together with other States in accordance with the Statute of the International Atomic Energy Agency. Negotiation of such agreements shall commence within 180 days from the original entry into force of this Treaty. For States depositing their instruments of ratification or accession after the 180-day period, negotiation of such agreements shall commence not later than the date of such deposit. Such agreements shall enter into force not later than eighteen months after the date of initiation of negotiations.

ARTICLE IV

1. Nothing in this Treaty shall be interpreted as affecting the inalienable right of all the Parties to the Treaty to develop research, production and use of nuclear energy for peaceful purposes without discrimination and in conformity with Articles I and II of this Treaty.

2. All the 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. Parties to the

Treaty in a position to do so shall also co-operate in contributing alone or together with other States or international organizations to 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.

ARTICLE V

Each Party to the Treaty undertakes to take appropriate measures to ensure that, in accordance with this Treaty, under appropriate international observation and through appropriate international procedures, potential benefits from any peaceful applications of nuclear explosions will be made available to non-nuclear-weapon States Party to the Treaty on non-discriminatory basis and that the charge to such Parties for the explosive devices used will be as low as possible and exclude any charge for research and development. Non-nuclear-weapon States Party to the Treaty shall be able to obtain such benefits, pursuant to a special international agreement or agreements, through an appropriate international body with adequate representation of non-nuclear-weapon States. Negotiations on this subject shall commence as soon as possible after the Treaty enters into force. Non-nuclear-weapon States Party to the Treaty so desiring may also obtain such benefits pursuant to bilateral agreements.

ARTICLE VI

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.

ARTICLE VIII

(...)

(3) Five years after the entry into force of this Treaty, a conference of Parties to the Treaty shall be held in Geneva, Switzerland, in order to review the operation of this Treaty with a view to assuring that the purposes of the Preamble and the provisions of the Treaty are being realized. At intervals of five years thereafter, a majority of the Parties to the Treaty may obtain, by submitting a proposal to this effect to the Depositary Governments, the convening of further conferences with the same objective

of reviewing the operation of the Treaty.

ARTICLE X

(1) Each Party shall in exercising its national sovereignty have the right to withdraw from the Treaty if it decides that extraordinary events, related to the subject matter of this Treaty, have jeopardized the supreme interests of its country. It shall give notice of such withdrawal to all other Parties to the Treaty and to the United Nations Security Council three months in advance. Such notice shall include a statement of the extraordinary events it regards as having jeopardized its supreme interests.

(2) Twenty-five years after the entry into force of the Treaty, a conference shall be convened to decide whether the Treaty shall continue in force indefinitely, or shall be extended for an additional fixed period or periods. This decision shall be taken by a majority of the Parties to the Treaty.

EXCERPT FROM IAEA STATUTE

ARTICLE XII

Agency safeguards

A. With respect to any Agency project, or other arrangement where the Agency is requested by the Parties concerned to apply safeguards, the Agency shall have the following rights and responsibilities to the extent relevant to the project or arrangement:

1. To examine the design of specialized equipment and facilities, including nuclear reactors, and to approve it only from the viewpoint of assuring that it will not further any military purpose, that it complies with applicable health and safety standards, and that it will permit effective application of the safeguards provided for in this Article;

2. To require the observance of any health and safety measures prescribed by the Agency;

3. To require the maintenance and production of operating records to assist in ensuring accountability for source and special fissionable materials used or produced in the project or arrangement;

4. To call for and receive progress reports;

5. To approve the means to be used for the chemical processing of irradiated materials solely

to ensure that this chemical processing will not lend itself to diversion of materials for military purposes and will comply with applicable health and safety standards; to require that special fissionable materials recovered or produced as a by-product be used for peaceful purposes under continuing Agency safeguards for research or in reactors, existing or under construction, specified by the member or members concerned; and to require deposit with the Agency of any excess of any special fissionable materials recovered or produced as a by-product over what is needed for the above-stated uses in order to prevent stock-piling of these materials, provided that thereafter at the request of the member or members concerned special fissionable materials so deposited with the Agency shall be returned promptly to the member or members concerned for use under the same provisions as stated above.

6. To send into the territory of the recipient State or States inspectors, designated by the Agency after consultation with the State or States concerned, who shall have access at all times to all places and data and to any person who by reason of his occupation deals with materials, equipment, or facilities which are required by this Statute to be safeguarded, as necessary to account for source and special fissionable materials supplied and fissionable products and to determine whether there is compliance with the undertaking against use in furtherance of any military purpose referred to in sub-paragraph F-4 of Article XI, with the health and safety measures referred to in sub-paragraph A-2 of this Article, and with any other conditions prescribed in the agreement between the Agency and the State or States concerned. Inspectors designated by the Agency shall be accompanied by representatives of the authorities of the State concerned, if that State so requests, provided that the inspectors shall not thereby be delayed or otherwise impeded in the exercise of their functions.

7. In the event of non-compliance and failure by the recipient State or States to take requested corrective steps within a reasonable time, to suspend or terminate assistance and withdraw any materials and equipment made available by the

Agency or a member in furtherance of the project.

B. The Agency shall, as necessary, establish a staff of inspectors. The Staff of inspectors shall have the responsibility of examining all operations conducted by the Agency itself to determine whether the Agency is complying with the health and safety measures prescribed by it for application to projects subject to its approval, supervision or control, and whether the Agency is taking adequate measures to prevent the source and special fissionable materials in its custody or used or produced in its own operations from being used in furtherance of any military purpose. The Agency shall take remedial action forthwith to correct any non-compliance or failure to take adequate measures.

C. The staff of inspectors shall also have the responsibility of obtaining and verifying the accounting referred to in sub-paragraph A-6 of this Article and of determining whether there is compliance with the undertaking referred to in sub-paragraph F-4 of Article XI, with the measures referred to in sub-paragraph A-2 of this Article, and with all other conditions of the project prescribed in the agreement between the Agency and the State or States concerned. The inspectors shall report any non-compliance to the Director General who shall thereupon transmit the report to the Board of Governors. The Board shall call upon the recipient State or States to remedy forthwith any non-compliance which it finds to have occurred. The Board shall report the non-compliance to all members and to the Security Council and General Assembly of the United Nations. In the event of failure of the recipient State or States to take fully corrective action within a reasonable time, the Board may take one or both of the following measures: direct curtailment or suspension of assistance being provided by the Agency or by a member, and call for the return of materials and equipment made available to the recipient member or group of members. The Agency may also, in accordance with Article XIX, suspend any non-complying member from the exercise of the privileges and rights of membership.

List of Parties

Treaty on the Non-Proliferation
of Nuclear Weapons
(as of 31 July 1990)

Country	1.	2.	Country	1.	2.
Afghanistan	1970	1978	Gabon	1974	1979 ^a
Albania	1990		Gambia	1975	1978
Antigua and Barbuda	1981	1990 ^a	Germany, Federal		
Australia	1973	1974	Republic of	1975	1977
Austria	1969	1972	Ghana	1970	1975
Bahamas	1973		Greece	1970	1981
Bahrain	1988		Grenada	1974	
Bangladesh	1979	1982	Guatemala	1970	1982
Barbados	1980		Guinea	1985	
Belgium	1975	1977	Guinea-Bissau	1976	
Belize	1985	1986 ^b	Haiti	1970	1975 ^a
Benin	1972		Holy See	1971	1972
Bhutan	1985	1989	Honduras	1973	1975
Bolivia	1970	1974 ^a	Hungary	1969	1972
Botswana	1969		Iceland	1969	1974
Brunei Darussalam	1985	1987	Indonesia	1979	1980
Bulgaria	1969	1972	Iran, Islamic Republic of	1970	1974
Burkina Faso	1970		Iraq	1969	1972
Burundi	1971		Ireland	1968	1977
Cameroon	1969		Italy	1975	1977
Canada	1969	1972	Ivory Coast	1973	1983
Cape Verde	1979		Jamaica	1970	1978
Central African Republic	1970		Japan	1976	1977
Chad	1971		Jordan	1970	1978
Colombia	1986		Kampuchea, Democratic	1972	
Congo	1978		Kenya	1970	
Costa Rica	1970	1979	Kiribati	1985	1990
Cyprus	1970	1973	Korea, Democratic People's		
Czech and Slovak			Republic	1985	
Federal Republic	1969	1972	Korea, Republic of	1975	1975
Denmark	1969	1977	Kuwait	1989	
Dominica	1984		Lao People's Democratic		
Dominican Republic	1971	1973	Republic	1970	1989 ^b
Ecuador	1969	1975	Lebanon	1970	1973
Egypt	1981	1982	Lesotho	1970	1973
El Salvador	1972	1975	Liberia	1970	
Equatorial Guinea	1984	1986 ^b	Libyan Arab Jamahiriya	1975	1980
Ethiopia	1970	1977	Liechtenstein	1978	1979
Fiji	1972	1973	Luxembourg	1975	1977
Finland	1969	1972			...

Madagascar	1970	1973	San Marino	1970	1977 ^b
Malawi	1986		Sao Tome and Principe	1983	
Malaysia	1970	1972	Saudi Arabia	1988	
Maldives	1970	1977	Senegal	1970	1980
Mali	1970		Seychelles	1985	
Malta	1970	1990	Sierra Leone	1975	1977 ^a
Mauritius	1969	1973	Singapore	1976	1977
Mexico	1969	1973	Solomon Islands	1981	
Mongolia	1969	1972	Somalia	1970	
Morocco	1970	1975	Spain	1987	1989
Mozambique	1990		Sri Lanka	1979	1984
Nauru	1982	1984	Sudan	1973	1977
Nepal	1970	1972	Suriname	1976	1979
Netherlands	1975	1977	Swaziland	1969	1975
New Zealand	1969	1972	Sweden	1970	1975
Nicaragua	1973	1976	Switzerland	1977	1978
Nigeria	1968	1988	Syrian Arab Republic	1969	
Norway	1969	1972	Thailand	1972	1974
Panama	1977	1988 ^a	Togo	1970	1990 ^a
Papua New Guinea	1982	1983	Tonga	1971	1975 ^b
Paraguay	1970	1979	Trinidad and Tobago	1986	
Peru	1970	1979	Tunisia	1970	1990
Philippines	1972	1974	Turkey	1980	1981
Poland	1969	1972	Tuvalu	1979	1986 ^b
Portugal	1977	1986	Uganda	1982	
Qatar	1989		Uruguay	1970	1976
Romania	1970	1972	Venezuela	1975	1982
Rwanda	1975		Viet Nam	1982	1990
Saint Lucia	1979	1990	Yemen, Republic of	1979	
Saint Vincent and the Grenadines	1984		Yugoslavia	1970	1973
Samoa	1975	1979	Zaire	1970	1972

1. Date of ratification, accession or succession.

2. Entry into force of the Safeguards agreement concluded with the IAEA.

^a Signed.

^b Approved by the Board.

Chapter 7

The Sea-Bed Treaty (1971)

Ahmed Mahiou

The purpose of the Sea-Bed Treaty, which was signed on 11 February 1971 and entered into force on 18 May 1972, is to prohibit the placing of nuclear weapons and other weapons of mass destruction on the sea-bed and the ocean floor and in the subsoil thereof outside territorial waters. To date, 82 States have acceded to the Treaty, while 23 more have signed (a list of ratifications and signatures as at 31 December 1989 is attached).

As with any disarmament treaty, its effectiveness largely depends upon the possibility of verifying States Parties' compliance with it.¹ For this reason verification was at the centre of the discussions which took place both at the time of its adoption and during the three review conferences held in 1977, 1983 and 1989. Article III of the Sea-Bed Treaty - on verification - is the most important provision in both quantitative and qualitative terms; it is the longest Article, displaying the "diversity, complexity and, in some cases, ambiguity" which have been identified in the verification process.²

The present study approaches the 1971 Treaty from the viewpoint of verification. A description and analysis of its content are followed by an examination of whether verification has had a chance to be applied, and whether it is possible to suggest improvements, bearing in mind new factors both of a legal nature (the Convention on the Law of the Sea) and of a technical nature (technological progress in the field of oceanography and armaments).³

I - Analysis of the Verification Procedure

Since verification of this Treaty relates to regions beyond national jurisdictions, one might have expected a stricter and more intrusive system for the sea-bed and the ocean floor than for other more sensitive areas. This is not the case. In fact, the 1971 Treaty bears marks of distrust on the part of the two major Powers, whose joint draft served as a basis for work during the conference which drew up and adopted the Treaty. The verification process favours national means at the expense of international machinery,

¹ Cf. E. Morris, *La question de la vérification dans les négociations sur le désarmement aux Nations Unies*, UNIDIR, United Nations, 1988.

² Cf. S. Sur, *A Legal Approach to Verification in Disarmament or Arms Limitation*, UNIDIR Research Paper, No. 1, 1988, p. 5.

³ Cf. J. Goldblat, "The Sea-Bed Treaty and Arms Control", *Security at Sea: Naval Forces and Arms Control*, SIPRI, Oxford University Press, 1989; G. Fisher, "La conférence d'examen du traité sur la dénucléarisation des fonds marins", *AFDI*, 1977, pp. 809 et seq.; "Note sur la 2ème Conférence d'examen du traité sur la dénucléarisation des fonds marins", *AFDI*, 1983, pp. 639 et seq.

and is articulated around an arrangement involving, first, observation; second, inspection (where appropriate); third, co-operation through consultation, collaboration or technical assistance from one or more Parties; and fourth, the procedures set out in the Charter of the United Nations, and specifically the involvement of the Security Council.

OBSERVATION

Naturally, observation using national technical means is the starting point of the verification process for the purpose of establishing the facts. Legally, the operation raises no particular problem in principle, since it is carried out in an area open to activities by all States. On this point, it may be noted that the Treaty does not innovate *vis-à-vis* the customary rules of international law, which leave each party the recognized freedom of action in maritime zones not subject to the jurisdiction of another State.⁴ The contribution made by Article III, paragraph 1, is rather to legitimize the official use of means of observation, without the need for any specific precautions or discretion, and without the risk that the use of such means might be regarded as an unfriendly act by the State concerned.

The right of observation is restricted only by the obligation not to interfere with activities in the area. We shall see that this apparently limited obligation may become broader depending on the interpretation and application of the Convention on the Law of the Sea, some of whose provisions are already regarded as forming part of customary law and liable to be cited in order to demarcate the competences of States. Technically, however, observation does pose complex problems in relation to the sea-bed and its subsoil, the depth of which may offer a major, not to say insurmountable, obstacle to many States for whom it is not practically possible to go and observe what is happening in these areas. Since observation is carried out at a distance and cannot be accompanied by intrusive action on-site, it calls for technical facilities whose scale and sophistication need to be directly related to the size and depth of the suspected zone. There is a need not only for financial resources, but also for technical facilities such as sonars, bathyscaphes and satellites which would indicate whether installations are submerged and whether their characteristics are such as to raise doubts sufficient to trigger the follow-up procedure.

INSPECTION

As the second phase of the process, inspection is neither automatic nor mandatory, and in addition is subject to a number of conditions. First of all, "reasonable doubts" must

⁴ In fact, this was one of the criticisms made by a number of States when the Treaty was being drawn up, emphasizing the timidity of the verification process (see, for example, the views of India, ENDC/PV.248, 14 August 1969, pp. 11 and 12, or Nigeria, ENDC/PV.430, 31 August 1969, pp. 20 and 21).

exist as to the type of object installed before for the observing State can enter into contact with the suspected State.

The concept of reasonable doubt is sufficiently flexible to offer a source of controversy, depending on the Parties' good faith or lack of it. It is a legitimate protection for the suspected State, by precluding accusations which are misplaced or based on assumptions rather than serious evidence. At the same time it creates a gap between States which are capable of providing technical backing for their observations and creating genuine doubt as to the nature of the installations, and those which cannot achieve such a high-quality result in support of a request for consultation and inspection.

Subsequently, if the consultations between the Parties concerned do not succeed in eliminating the doubt, the inspection proper will begin, involving a visit *insitu* to ensure that "the object, structure, installation or other facility" does not infringe the Treaty. The "appropriate inspection" stipulated in Article III, paragraph 2, presupposes the reliability of the means used, especially in the case of multipurpose installations whose nature and object are not easily identifiable and which may conceal prohibited activities. In this regard, and in order to prevent the dishonest application of the Treaty, the American representative offered two interpretations at the time the provisions were being drawn up: first, any device capable of detaching itself from the sea-bed and the ocean floor for the purpose of independent movement is authorized; and, second, that installations which can be used both for conventional and for prohibited weapons are also prohibited.⁵ Neither of these interpretations was contested. In the absence of information on subsequent practice, it is difficult to say whether these interpretations have led to problems relating to the characterization of devices and installations.

CO-OPERATION

The Treaty establishes a process of co-operation which is more or less extensive depending on the results of observation or inspection and the attitudes of the Parties concerned.

Co-operation first takes the form of bilateral consultations: the verifying State and the suspected State must embark on consultations with a view to removing any doubts that have arisen. It is possible that the process may end there if the information and explanations supplied prove satisfactory and allay the fears of the verifying State. If not, the consultation procedure is broadened and acquires a multilateral character through the provision of information supplied by other Parties on whom suspicion may fall. The obligation to consult is converted into an obligation to co-operate as regards the suspected State; the latter must agree with the verifying State appropriate measures to allay suspicion. Parties located in the region, or any other Parties to the treaty which so request, have the right to participate in this procedure.

⁵ Cf. P. Merciai, "La démilitarisation des fonds marins", *RGDIP*, 1984, pp. 73 *et seq.*

However, while there is an obligation to consult and co-operate, there are no real mandatory intrusive measures available, since the inspection can only be carried out with the consent of the accused State. The question of consent fails to arise only if the State responsible for the disputed activities cannot be identified by observation; in such cases, and before inspection takes place, the verifying State must notify the other Parties in the region (and any other State Parties) which have agreed to co-operate with it to facilitate the investigations and help to identify the State responsible. It must be acknowledged that cases in which the responsible State cannot be identified are fairly hypothetical, since the size, cost and technical problems involved in the installation of facilities on or in the sea-bed are such that a State would be unlikely to embark on such an operation clandestinely and fail to ensure surveillance and protection. In other words, inspection without consent is unlikely to arise in reality.

The last case of co-operation is that intended to overcome the handicap experienced by a party which does not possess or cannot operate means of verification. Article III, paragraph 5 authorizes recourse to assistance from any other Party to the Treaty, introducing a kind of multilateral form of verification. Nonetheless, this assistance, whether full or partial, is not mandatory, and in particular depends on the technical capabilities of the Party to which the request is addressed, leading some writers to conclude that the practical consequence of this clause is that the help of one or other of the major Powers will be enlisted, on account of their monopoly of verification capabilities in this area.⁶ However, as we shall see below, discussions still continue on this point, particularly on the occasion of review conferences, where some Members call for international machinery for observation and inspection.⁷

RECOURSE TO THE UNITED NATIONS

The United Nations may intervene in two sets of circumstances, which do not signify new areas of competence compared with the role entrusted to the various organs under the Charter in the field of international peace and security.

The first form of intervention would occur if a party appealed for United Nations assistance to help with the task of verification. The purpose is to prevent the right to verification from being meaningless for a State which has no means of verification or inspection. Viewed from this perspective, the intervention is similar to activities involving co-operation and assistance to developing countries, but as it relates to the specific area of disarmament, it falls under United Nations responsibility to maintain international peace and security. Consequently, when the Treaty mentions procedures under the Charter (Article III, paragraph 5), it is referring to organs responsible for such activities, namely the General Assembly, the Security Council and the Secretary-General. However, this interpretation was amended by a Soviet declaration

⁶ Cf. P. Merciai, *op.cit.*, p. 82.

⁷ For the first review conference, see *United Nations Disarmament Yearbook*, 1977, Vol. 2, pp. 323 *et seq.*; for the second conference, see *Yearbook* 1983, Vol. 8, pp. 442 *et seq.*; for the third conference see SBT/CONF.III/15, Part III, pp. 55, 61 and 70.

in 1970 (not contested by the other Members of the Committee on Disarmament), to the effect that United Nations intervention could occur only under the supervision of the Security Council, to the exclusion of any other organ and, *a fortiori*, any existing institution such as IAEA, or future institution such as the Sea-Bed Authority. By limiting supervision of verification in this way to the Security Council alone, the major Powers kept for themselves the right to oversee the process and, if necessary, to oppose it by means of their veto.

The second form of intervention specifically falls under the competence of the Security Council, since Article III, paragraph 4, makes provision for this where obligations under the Treaty are breached. It would seem that this provision adds nothing to those of the Charter, particularly Article 35, under which a State may bring before the Council any disagreement or dispute with another State. There are even grounds for arguing that Article III, paragraph 4, of the Treaty represents a step backwards since recourse to the Security Council is predicated on the breach of an obligation which becomes apparent only when the process of observation, consultation or inspection has been completed. This indicates the spirit which reigned when the Treaty was being drawn up and adopted, favouring bilateral relations over multilateral machinery, whose action is strictly circumscribed and limited to a single United Nations organ.

Nevertheless, following the third review conference, new element should be noted in connection with the role of the United Nations Secretary-General in gathering information on technological developments relevant to the Treaty and to the verification of compliance with it (a point we shall return to later).

II - Experience with Verification

To judge by statements made by the Parties to the Treaty, verification - with its components of consultation and inspection - does not yet appear to have been applied. At each of the review conferences, the participants have noted that "no State Party has found it necessary to invoke the provisions of Article III, paragraphs 2, 3, 4 and 5, dealing with international complaints and verification procedures". Thus none of them appears to have had grounds for suspecting that any other Party has failed to comply with its obligations.

Nevertheless, some States - the principal Powers at least - have undoubtedly conducted observation exercises, but have provided no information in that regard since they are not required to do so. It would have been interesting to know the quantity, type and frequency of observations, the areas concerned and the difficulties encountered. As matters stand, one State offered a restrictive interpretation of observation as an operation incidental to the normal course of navigation;⁸ this

⁸ This interpretation was put forward, *inter alia*, by Brazil on 19 May 1988, on ratifying the Treaty; it had already been formulated earlier (cf. "Status of multilateral arms regulation and disarmament", special supplement to the *United Nations Disarmament Yearbook*, 1978, p. 108).

interpretation prompted objections from other Parties, particularly the depositary Powers (the United Kingdom on 3 May 1989, the United States on 16 March 1989 and the Soviet Union on 21 July 1989).

Difficulties could have arisen following the adoption of the Convention on the Law of the Sea in 1982. Since the peaceful uses of the sea and the sea-bed were on the agenda of the third conference, several countries took the opportunity to raise the question of the demilitarization of undersea areas. The initiative ended abruptly as a result of keen opposition from the major Powers and their allies, which considered that such a discussion fell outside the terms of reference of the conference and belonged with bodies dealing with disarmament. Nevertheless, there was consensus in establishing the general principle of the use of the high seas and the sea-bed area exclusively for peaceful purposes (art. 141 and art. 147, para. 2 of the Convention) and in reiterating that States' conduct should be in accordance with the principles of the Charter of the United Nations and the other rules of international law.⁹

This does not signify a demilitarization of the sea-bed and does not affect what was agreed in the 1971 Treaty.

Yet is it beyond argument that, as asserted by the 1983 and 1989 review conferences, "nothing contained in the Convention on the Law of the Sea . . . affects the rights and obligations assumed by . . . Parties" to the 1971 Treaty?¹⁰ The response is not so clear as regards the sea-bed in the exclusive economic zone and the continental shelf in which coastal States exercise certain exclusive competences which are likely to have implications for the verification process. Article III, paragraph 6, of the Treaty provides that verification activities shall be conducted with due regard for the rights of coastal States with respect to the exploitation and exploration of the continental shelf. This requirement was reconfirmed and broadened in the provisions of the 1982 Convention on artificial islands, installations and other structures at sea.

The rights of the coastal State may constitute a constraint or an impediment for a verifying State in so far as the coastal State regulates the laying of submarine cables and pipelines (art. 79 of the Convention) and, in particular, requires that its consent should be sought for all matters relating to scientific research in the exclusive economic zone and on the continental shelf (art. 246, para. 5), especially if the scientific research is directed towards concealed military purposes. It would also appear that mining operations can neutralize sonars in a certain area and thus make observation or investigation difficult or ineffective.¹¹ Lastly, the 1982 Convention authorizes a State to establish a safety zone not exceeding 500 metres in breadth around its installations (arts. 60 and 260). This may hamper observation and prevent unauthorized intrusion, a punishable offence which may give rise to hot pursuit (art.

⁹ Cf. T. Treves, "La notion d'utilisation des espaces marins à des fins pacifiques dans le nouveau droit de la mer", *AFDI*, 1980, pp. 687 *et seq.*; "Military Installations, Structures and Devices on the Sea-Bed", *AJIL*, 1980, pp. 807 *et seq.*

¹⁰ See the preambles to the declarations adopted by the review conferences.

¹¹ Cf. John P. Craven, "Oceanic Arms Control", *Pacem in Maribus, Proceedings of the Conference*, Malta, Royal University of Malta Press, 1971, Vol. 1, p. 82.

111, para. 2). Hence there are possible difficulties in the way of achieving a harmonious interpretation of the Convention on the Law of the Sea and the Sea-Bed Treaty, as can be seen from Mexico's demand regarding rights it exercises over its continental shelf, made when it acceded to the Treaty on 23 March 1984, and the objections raised to this interpretation by other States.¹² The Mexican viewpoint is shared by other countries such as Canada, India and Yugoslavia, each of which has stated that it will not authorize any surveillance installations in its exclusive economic zone or on its continental shelf.

Nonetheless, foreign intrusion in an area under national jurisdiction does not necessarily lead to the exercise of all the competences recognized under international law, including those relating to verification, as the *Whiskey* incident shows.¹³ In October 1981, a Soviet submarine ran aground after venturing into Swedish territorial waters close to a naval base, raising serious suspicions that it was engaged in espionage and was carrying nuclear weapons. In response to Sweden's demands that the vessel should be inspected, the Soviet Union took refuge behind the immunity which any warship enjoys unless the flag State agrees to waive it. Finally, Sweden was able to undertake only a limited inspection, examining the outside of the hull, the technical facilities and the navigation papers. It met with a refusal by the submarine's commander to allow entry into the torpedo chamber to check whether the torpedoes had nuclear warheads. It did not press the matter, thus leaving open the question of the scope of verification powers arising from the customary rules and conventional rules applicable in this field.

III - Possible Improvements

In the absence of practical experience with verification and information thereon, it is difficult to identify shortcomings in the system and possible remedies. This can only be approached in a somewhat abstract and derivative manner. It is at the review conferences that discussions regularly take place concerning possible improvements in the verification system, which centre on two ideas: the establishment of international machinery, and improved information on the implications of scientific and technological progress, which has been made possible by the recent improvement in international relations.

1. International verification machinery: the countries which oppose any change in the current system cite the fact that to date the Treaty has been applied in a straightforward way, with no party having had reason to complain of default by another party, thus making it unnecessary to resort to consultations, inspections or the

¹² Mexico's position and the objections made by the United States (on 26 February 1985), the Federal Republic of Germany (on 14 October 1985) and Australia (on 12 June 1987) are reproduced in the documents of the third review conference, SBT/CONF.III/4/Add.1 and 3.

¹³ Cf. C. Rousseau, "Chronique des faits internationaux", *RGDIP*, 1982, pp. 398 *et seq.*; A. Manin, "L'échouement du *Whiskey 137* et le droit de la mer", *AFDI*, 1981, pp. 689 *et seq.*

intervention of the Security Council. Hence there would seem to be no need to establish a new system. Furthermore, the establishment of any new body raises technical and financial problems, whereas States are not ready to assume commitments because of budgetary constraints. Consequently, the *status quo* should be maintained.

Other countries favour international verification machinery for technical and political reasons. The technical reason, which has been referred to above, concerns non-existent or inadequate national means of verification, a problem which must be overcome. Underlying the political reason is a wish to reduce or avoid the tutelage which the major Powers exercise over verification either *de facto* (through their possession of technological capabilities) or *de jure* (through their veto in the Security Council). Some countries consider that the appropriate international body might be the Sea-Bed Authority. Although the Authority has no specific powers as regards verification in the field of disarmament, the 1982 Convention gives it the task of ensuring that installations for carrying out activities in the international area are "used exclusively for peaceful purposes" (art. 147, para. 2 (d)). If the Authority establishes the presence of installations which do not comply with this requirement, it may take any verification measure, including inspection (art. 153, paras. 4 and 5) and, in the event of a violation, may penalize the party responsible by suspending or terminating a contract (art. 153, para. 6 of the Convention and Articles 18 and 19 of annex III).

Nevertheless, such intervention by the Authority is dependent upon the Convention's entry into force, and above all is limited to the international area of the sea-bed and to the Parties to the Convention.

As this solution is not acceptable to many States, a less ambitious and less controversial system has been proposed, in the form of a committee of experts (whose status has not yet been defined),¹⁴ by reference in particular to the consultative committee mentioned in the Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques.¹⁵ This offers a useful avenue for considering ways to improve the verification system and countering the criticisms levelled at the 1971 Treaty that it suffers from rigidity or can easily be blocked.¹⁶

2. Better Information: the second criticism relates to the lack of co-operation in the field of information on the real evolution of data on the sea-bed. Whereas Article VII of the Treaty provides for review conferences which "shall take into account any relevant technological developments", no conference has produced results in this matter. As a number of States have pointed out, it is unlikely that the considerable progress which has been made in observation techniques, and in the exploration and exploitation of the sea-bed has no implications for the Treaty.

At all events, in the absence of data to serve as the basis for useful discussion, each review conference contents itself with recording the various viewpoints and noting the proposals made by those who wish to entrust a group of experts with the task of

¹⁴ The suggestion was made by Sweden, Japan, Switzerland and Iran in 1977, and by the Netherlands in 1983.

¹⁵ See the statement by Sweden in 1977.

¹⁶ Cf. P. Merciai, *op.cit.*, pp. 86 and 107.

gathering, analysing and disseminating information, as well as the objections of those opposed to such a solution, particularly the three depositary States. Intervention by an international group of experts may well be the best way to update the 1971 Treaty and attract new Parties. It has been suggested that such a group of experts should operate under the auspices of either the United Nations (under the Swedish proposal), UNIDIR (under the Netherlands proposal), or the Conference on Disarmament (under the Hungarian proposal).¹⁷ Ultimately it was the Swedish proposal which served as a basis for the solution adopted at the third review conference, which requested the Secretary-General of the United Nations to report on technological developments, with the assistance of appropriate expertise and States Parties.¹⁸

This solution can be seen as a first important step towards the establishment of real international machinery to supply information and later, perhaps, to verify compliance with the Sea-Bed Treaty.

3. During the same third review conference, in September 1989, all the Parties, and the nuclear Powers in particular, stated that they had not placed and had no intention of placing nuclear weapons or weapons of mass destruction within their territorial waters. Such formal declarations amount to a commitment which is likely to give a degree of satisfaction to those urging the extension of the treaty provisions to territorial waters. However, no verification procedure is attached to these commitments, respect for which depends on the good faith of their authors alone.

In conclusion, the fact that each review conference notes the smooth operation of the Sea-Bed Treaty offers no encouragement to take further steps to refine its provisions. However, it is conceivable that the upheaval currently affecting international relations as a result of *perestroika* will have substantial repercussions for disarmament agreements. By creating a new situation in which distrust gives way to confidence and rivalry between blocs has become obsolete, the current trends can only encourage and promote bolder approaches in the field of disarmament, with improved and more thorough verification procedures. There is a need for these procedures to become more comprehensive, more strict and more effective and, in the case of the Sea-Bed Treaty, more international, since its context is more favourable than that of other treaties.

¹⁷ Cf. *United Nations Disarmament Yearbook*, 1983, Vol. 8, p. 442.

¹⁸ Cf. Final Declaration, SBT CONF.III/15, p. 15.

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Table 1: Procedures related to the Sea-Bed Treaty of 1971
Main Treaty Provisions and Monitoring and Verification Methods

	Factfinding								Assessment procedures				
	0	1	2	3	4	5	6	7	8	9	10	11	12
Establishment of data base													
Limitation of use													
Limitation of deployment													
Limitation of testing													
Limitation of possession													
Limitation of production													
Limitation of transfer													
Prohibition of use													
<i>Prohibition of deployment</i>													
Prohibition of testing													
Prohibition of possession													
Prohibition of production													
Prohibition of transfer													
Destruction													

0 = No method; 1 = National Technical Means; 2 = Exchange of data; 3 = Consultation; 4 = Control Posts/Observation; 5 = On-site inspection on a State territory; 6 = On-site inspection on a non-State territory; 7 = IAEA Safeguards; 8 = Review Conference; 9 = Submission of report; 10 = Consultation; 11 = Referral to an international organization; 12 = Referral to the International Court of Justice.

For further explanation see also pages 203 and 32-34.

Explanatory note on Table 1

The Sea-Bed Treaty prohibits the deployment of nuclear weapons or any other types of weapons on the Sea-Bed (Article I, paragraph 1). At the time of signature no such weapons, or storing or testing facilities for such weapons existed at the sea-bed.

Factfinding methods

The deployment prohibition may be verified through observation (Article III, paragraph 1), consultation (Article III, paragraph 2 and 3), and on-site inspection (Article III, paragraph 2 and 3).

Assessment procedures

Article III, paragraph 2, 3 and 4 provide for the circulation of a report by the party initiating verification procedures.

Consultation and Co-operation with other States Party to the Treaty, including International Organizations or Coastal States not party to the Treaty, is provided for in Article III, paragraph 2.

Article VII provides for a review conference.

Article III, paragraph 4 provides for referral to the UN Security Council in conformity with the UN Charter.

The Relevant Treaty Article

TREATY ON THE PROHIBITION OF THE EMBLACEMENT OF NUCLEAR WEAPONS AND OTHER WEAPONS OF MASS DESTRUCTION ON THE SEA-BED AND THE OCEAN FLOOR AND IN THE SUBSOIL THEREOF
(11 FEBRUARY 1971, LONDON, MOSCOW AND WASHINGTON)

(...)

ARTICLE I

(1) The States Parties to this Treaty undertake not to emplace or emplace on the sea-bed and the ocean-floor and in the subsoil thereof beyond the outer limit of a sea-bed zone, as defined in Article II, any nuclear weapons or any other types of weapons of mass destruction as well as structures, launching installations or any other facilities specifically designed for storing, testing or using such weapons.

(...)

ARTICLE III

(1) In order to promote the objectives of and ensure compliance with the provisions of this Treaty, each State Party to the Treaty shall have the right to verify through observation the activities of other States Parties to the Treaty on the sea-bed and the ocean-floor and the subsoil thereof beyond the zone referred to in Article 1, provided that observation does not interfere with such activities.

(2) If after such observation reasonable doubts remain concerning the fulfilment of the obligations assumed under the Treaty, the State Party having such doubts and the State Party that is responsible for the activities giving rise to the doubts shall consult with a view to removing the doubts. If the doubts persist, the State Party having such doubts shall notify the other States Parties, and the Parties concerned shall co-operate on such further procedures for verification as may be agreed, including appropriate inspection of objects, structures, installations or other facilities that reasonably may be expected to be of a kind described in Article 1. The Parties in the region of the activities, including any coastal State, and any other Party so requesting, shall be

entitled to participate in such consultation and co-operation. After completion of the further procedures for verification, an appropriate report shall be circulated to other Parties by the Party that initiated such procedures.

(3) If the State responsible for the activities giving rise to the reasonable doubts is not identifiable by observation of the object, structure, installation or other facility, the State Party having such doubts shall notify and make appropriate inquiries of States Parties in the region of the activities and of any other State Party. If it is ascertained through these inquiries that a particular State Party is responsible for the activities, that State Party shall consult and co-operate with other Parties as provided in paragraph 2 of this article. If the identity of the State responsible for the activities cannot be ascertained through these inquiries, then further verification procedures, including inspection, may be undertaken by the inquiring State Party, which shall invite the participation of the Parties in the region of the activities, including any coastal State, and of any other Party desiring to co-operate.

(4) If consultation and co-operation pursuant to paragraphs 2 and 3 of this article have not removed the doubts concerning the activities and there remains a serious question concerning fulfilment of the obligations assumed under this Treaty, a State Party may, in accordance with the provisions of the Charter of the United Nations, refer the matter to the Security Council, which may take action in accordance with the Charter.

(5) Verification pursuant to this Article may be undertaken by any State Party using its own means, or with the full or partial assistance of any other State Party, or through appropriate international procedures within the framework of the United Nations and in accordance with its Charter.

(6) Verification activities pursuant to this Treaty shall not interfere with activities of other States Parties and shall be conducted with due regard for rights recognized under international law, including the freedoms of the high seas and the rights of coastal States with respect to the exploration and exploitation of their continental shelves.

(...)

ARTICLE VII

Five years after the entry into force of this Treaty, a conference of Parties to the Treaty shall be held at Geneva, Switzerland, in order to review the operation of this Treaty with a view to assuring that the purposes of the Preamble and the provisions of the Treaty are being realized. Such review shall take into account any relevant technological developments. The review conference shall determine, in accordance with the views of a majority of those Parties attending, whether and when an additional review conference shall be convened.

ARTICLE VIII

Each State Party to this Treaty 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 jeopardized the supreme interests of its country. It shall give notice of such withdrawal to all other States Parties to the Treaty and to the United Nations Security Council three months in advance. Such notice shall include a statement of the extraordinary events it considers to have jeopardized its supreme interests.

List of Parties

**Treaty on the Prohibition of the Emplacement of Nuclear Weapons and
Other Weapons of Mass Destruction on the Sea-Bed and
the Ocean Floor and in the Subsoil Thereof
(as of 31 July 1990)**

Afghanistan	1971	Guinea	S
Antigua and Barbuda	1988	Guinea-Bissau	1976
Argentina	1983	Honduras	S
Australia	1973	Hungary	1971
Austria	1972	Iceland	1972
Bahamas	1989	India	1973
Belgium	1972	Iran, Islamic Republic of	1971
Benin	1986	Iraq	1972
Bolivia	S	Ireland	1971
Botswana	1972	Italy	1974
Brazil	1988	Ivory Coast	1972
Bulgaria	1971	Jamaica	1986
Burundi	S	Japan	1971
Byelorussian Soviet Socialist Republic	1971	Jordan	1971
Cambodia	S	Korea, Republic of	1987
Cameroon	S	Lao People's Democratic Republic	1971
Canada	1972	Lebanon	S
Cape Verde	1979	Lesotho	1973
Central African Republic	1981	Liberia	S
Colombia	S	Libyan Arab Jamahiriya	1990
Congo	1978	Luxembourg	1982
Costa Rica	S	Madagascar	S
Cuba	1977	Malaysia	1972
Cyprus	1971	Mali	S
Czech and Slovak Federal Republic	1972	Malta	1971
Denmark	1971	Mauritius	1971
Dominican Republic	1972	Mexico	1984
Equatorial Guinea	S	Mongolia	1971
Ethiopia	1977	Morocco	1971
Finland	1971	Myanmar	S
Gambia	S	Nepal	1971
German Democratic Republic ¹	1971	Netherlands	1976
Germany, Federal Republic of ¹	1975	New Zealand	1972
Ghana	1972	Nicaragua	1973
Greece	1985		...
Guatemala	S		

Niger	1971	Swaziland	1971
Norway	1971	Sweden	1972
Panama	1974	Switzerland	1976
Paraguay	S	Taiwan	1972
Poland	1971	Tanzania, United Republic of	S
Portugal	1975	Togo	1971
Qatar	1974	Tunisia	1971
Romania	1972	Turkey	1972
Rwanda	1975	Ukrainian Soviet Socialist Republic	1971
Sao Tome and Principe	1979	Union of Soviet Socialist Republics	1972
Saudi Arabia	1972	United Kingdom	1972
Senegal	S	United States of America	1972
Seychelles	1985	Uruguay	S
Sierra Leone	S	Viet Nam	1980
Singapore	1976	Yemen Arab Republic ²	S
Solomon Islands	1981	Yemen, Democratic Republic of ²	1979
South Africa	1973	Yugoslavia	1973
Spain	1987	Zambia	1972
Sudan	S		

S means that the Treaty was signed, but no further action has been taken.

¹ In 1990 the two States merged forming Germany.

² In 1990 the two States merged forming the Republic of Yemen.

Chapter 8

The Convention on Biological Weapons (1972)

Andrzej Karkoszka

The Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction, referred to as the Convention on Biological Weapons (BWC), was signed on 10 April 1972; after being ratified by 22 States, it entered into force on 26 March 1975. By the end of 1989 it had been adhered to by 111 States Parties.

By creating the legal grounds for the elimination of biological weapons, the conclusion of the Convention was a first step taken by the international community towards the curtailment of a dangerous category of weapons, considered by some to be weapons of mass destruction.¹ Because of the affinity of biological to chemical weapons and because of the inclusion of toxins in the scope of its prohibitions, the Convention strengthened the customary international norms regarding these two categories of weapons; hence its undeniable role in facilitating efforts leading to the elimination of chemical weapons. These circumstances attest to the political importance of the Convention. However, at the time of its conclusion its military significance was considered negligible. Biological (bacteriological) means of warfare were deemed grossly inferior to other weapons of mass destruction, whether chemical or nuclear. Being extremely uncontrollable, biological weapons could not be considered as effective battlefield weapons. Their military value was further lessened by the difficulty in storing filled munitions or bulk agents. This military ineptitude of biological weapons seems to be reflected in the verification provisions of the Convention. It should be noted, however, that scientific and technological developments since the Convention was signed have changed the perspective as to the utility and threat posed by the new types of biological warfare agents. These new circumstances underline the importance of the Convention and its relevance for the security of States.

I - Provisions of the Convention

Parties to the Convention undertake (Art. I) never "to develop, produce or otherwise acquire or retain" biological agents or toxins "whatever their origin or method of production, of types and in quantities that have no justification for prophylactic,

¹ According to a resolution adopted in 1948 by the Commission for Conventional Armaments "... weapons of mass destruction should be defined to include atomic explosive weapons, radioactive material weapons, lethal chemical and biological weapons, and any weapons developed in the future which have the characteristics comparable in destructive effect to those of the atomic bomb or other weapons mentioned above." Document S/C.3/32/Rev.1. This rather outdated definition seems questionable on both technical and military grounds.

protective or other peaceful purposes". Furthermore, the same prohibition applies to weapons, equipment or means of delivery designed to use such agents or toxins for hostile purposes or in armed conflict.

This stipulation permits the development and the possession of biological agents and toxins of types and in quantities "justified" by their peaceful applications. However, neither the quantities nor the term "peaceful purposes" are specified. The terms "prophylactic" and "protective" are often referred to in the wording of the prohibition under Article I. It seems to reflect a belief that a substantial stockpile of an agent is a prerequisite for a practical (offensive) BW capability.

Under Article II the Parties are obliged "to destroy, or to divert to peaceful purposes . . . all agents, toxins, weapons, equipment and means of delivery specified in Article I". The methods of destruction were, however, not specified apart from a requirement that "all necessary safety precautions shall be observed" and that the obligation should be carried out not later than nine months after the Convention becomes effective for a given State Party. No specific declaration or announcement of the destruction of a BW stockpile is required.

Article III forbids a direct or indirect transfer of materials prohibited in Article I "to any recipient whatsoever", or the assistance, encouragement or inducement of "any States, group of States or international organizations" to violate the prohibition embodied in Article I. Being quite specific, the stipulation in Article III does not, however, cover the sub-national groups or organizations which could undertake an action contrary to the purposes of the Convention.

Under Article IV the Parties are obliged "to take any necessary measures" within their jurisdictions to assure their adherence to the Convention. The legal form of these measures is not specified, as they are to be taken according to specific national "constitutional processes". In view of the weakness of the Convention's verification clauses, some States consider this stipulation a very valuable one. The domestic legal norms are an additional, and probably a more effective, mechanism to ensure that the Convention is being implemented. In fact the instruments possessed by States to enforce these norms are much more powerful than those envisaged by the Convention. This situation prompted France, for example, to abstain from ratifying the Convention until 1984 on the grounds that the lack of adequate verification provisions (weaker than those existing in French domestic law), tended to undermine the existing international custom against biological weapons instead of strengthening it.²

Articles V, VI and XII refer to the problem of verification of the Convention. In the case of problems "which may arise in relation to the objective of, or in the application of the provisions of, the Convention", the States Parties undertake to consult and to co-operate directly with one another or through "appropriate international procedures within the framework of the United Nations" (Art. V). Should a State Party to the Convention find that "any other State Party is acting in breach" of the obligations assumed under the Convention it may, according to Article VI, lodge

² See, for example, A. Fischer, "L'interdiction des armes bactériologiques", *AFDI*, 1971, pp. 125-130.

a complaint which "should include all possible evidence confirming its validity . . .". Each State Party is obliged "to co-operate in carrying out any investigation which the Security Council may initiate . . .".

Article XII, which foresees a review conference of the States Parties five years after the Convention enters into force or earlier if so requested by a majority of Parties, pertains to verification so far as it permits the implementation of all provisions of the Convention to be ascertained, including those on verification.

The only mandatory action under the verification procedures envisaged by the Convention is the requirement for consultations between States Parties. The modalities for these consultations are not specified. The possible forms of co-operation between Parties in resolving concerns of non-compliance investigated by the United Nations Security Council, prescribed by Article VI, would take effect only after the Council's decision. However, such a decision must be taken in accordance with the provisions of the United Nations Charter which includes the right of veto of the five permanent Members of the Council. The burden of the proof of a breach thus rests with the Party lodging the complaint.

The verification provisions of the Convention are visibly feeble. This seems to reflect the disregard for biological means of warfare as a militarily effective category of weapons on the part of the leading military Powers. The United States had already renounced them three years before signing the Convention. Thus it could see no harm in entering the Treaty despite the fact that it deemed it to be unverifiable. The Soviet Union saw the verification provisions as fully compatible with its doctrine, according to which national controlling mechanisms are superior to any verification of compliance based on international co-operation.

The Convention does not directly address the problem of use of BW agents or toxins. It upholds strongly, however, the ban on use in war of "bacteriological methods of warfare", stating in Article VIII that nothing in its stipulations "shall be interpreted as in any way limiting or detracting from the obligations assumed by any State" under the Geneva Protocol of 1925.

Finally, according to Article X the States Parties undertake "to facilitate, and have the right to participate in, the fullest possible exchange of equipment, materials and scientific technological information for the use of biological agents" and toxins "for peaceful purposes". The implementation of the Convention should not "hamper" the economic development of States Parties or international co-operation in peaceful uses of such agents and toxins.

II - The First Review Conference

As stipulated in Article XII, five years after the Convention entered into force, its First Review Conference took place in Geneva on 3-21 March 1980, with 53 States Parties and eight signatory States participating. The Conference had before it the material requested by the preparatory committee: a background paper on compliance prepared by the Secretariat, a background paper on new scientific and technological

developments relevant to the Convention prepared by the depositary Governments, and comments on these and other aspects of the operation of the Convention transmitted by the States Parties.³

As noted in the paper on compliance and in the comments of the Governments, general satisfaction was expressed as to the fulfilment of States' obligations under the Convention. As a result no State had felt a need to resort to consultations or to the complaints procedure provided for in Articles V and VI respectively. However, in the comments and, more thoroughly, in the debate during the Conference, several States, particularly the non-aligned and neutral ones, expressed concern about the adequacy of the complaints procedure, especially considering of the right of veto in the United Nations Security Council. Sweden, in particular, supported by a number of delegations, proposed a formal amendment to be incorporated into the Convention on the principle that a complaint lodged with the Security Council should be taken as a procedural, not a political, matter and hence not subject to veto. According to this view a consultative committee should be established to arrange for effective factfinding, including on-site visits. Only after such possibilities were exhausted should complaints be lodged with the Security Council.

On the other hand, several participating States saw no need for such an amendment or felt that such a move could undermine the Convention since the amendment procedure set out in Article XI was very elaborate, requiring acceptance by a majority of States Parties before any amendment could enter into force. However, most participants saw a need to clarify the meaning of the clause of Article V referring to the "appropriate international procedures within the framework of the United Nations". One possible interpretation of this clause proposed in the course of the debate was that a consultative committee should be established after a complaint or misgivings about the implementation of the Convention were formally raised.

Although no revisions of the verification and complaints procedures were accepted in the Final Declaration of the First Review Conference, it did bring important clarifications to the meaning of Article V. First, the participants agreed on the flexibility of provisions concerning consultations and co-operation, enabling States Parties "to use various international procedures". Secondly, it was agreed that the procedures include, *inter alia*, the right to request a consultative meeting of all Parties at the expert level. Thirdly, the divergent concerns raised on the adequacy of Article V prompted the participating States to agree that these matters "should be further considered at an appropriate time".

In sum, notwithstanding several critical opinions, the First Review Conference reaffirmed in its Final Declaration the importance and the effectiveness of the BW Convention. However, at the very moment of the adoption of the Final Declaration (without, however, influencing its wording), the viability of the Convention was seriously called into question.

³ For the records of the First Review Conference, see Document BWC/CONF.I/10 of 21 March 1980.

III - Allegations of Violations

In its closing statement at the First Review Conference the United States voiced its concern about the incident in the city of Sverdlovsk (USSR) where an accidental release of a lethal biological agent occurred early in April 1979, causing a number of deaths. The accident happened at a military facility believed to be engaged in research in microbiology and virology. According to the information published by the United States Government,⁴ the bacterial aerosol contaminated an area with a radius of at least 2 to 3 miles. Within two weeks a significant number of deaths occurred among residents who contracted pulmonary anthrax through inhalation and, probably, by skin contact and the consumption of contaminated food. Extensive disinfection and decontamination procedures were put into effect, and strict censorship on the media was enforced. In view of these developments the United States Government on 17 March 1980 privately asked the Soviet Union for explanations. But a day later, before Moscow responded, the United States made the issue public, thus implying a possible violation of Article I of the BW Convention. The official Soviet reaction, made public on 20 March 1980, denied any wrongdoing and accused the United States of acting in bad faith. The outbreak of the anthrax epidemic in Sverdlovsk was explained as resulting from gastric anthrax caused by the consumption of tainted meat. This explanation was reiterated on several subsequent occasions.

The United States has never formally charged the Soviet Union with a violation of Article I of the BW Convention, the reason being that the production of quantities of anthrax might not necessarily be a breach of the Convention. Nothing in the Convention serves as a guide as to how much of a substance would be beyond quantities justified by "protective" or "peaceful" purposes. On the other hand, even a very small quantity could cause an epidemic. The Soviet Union, the United States and many other States Parties to the Convention possess a number of facilities used for the development and production of biological agents for peaceful purposes, as well as military facilities involved in activities serving "protective" or defensive purposes in the domain of biological warfare.

It is a quite different matter whether the Soviet reply to the concerns expressed by the United States satisfies the requirements of Article V on consultations and co-operation in solving "any problems which may arise in relation to" the operation of the Convention. The Soviet response was strongly polemical, making no effort to accommodate other Parties alerted to a suspicious event. Only several years later, on the occasion of the Second Review Conference, some further explanations were given, corroborating the earlier position. In the view of the United States the matter has never been satisfactorily explained. The Soviet Union holds the opposite view. The

⁴ Soviet Biological Warfare Threat. Defense Intelligence Agency, DST-1610F-057-86; Soviet Biological Warfare Activities. A Report of the Subcommittee on Oversight, Permanent Select Committee on Intelligence, US House of Representatives, June 1980; see also Elisa D. Harris, "Sverdlovsk and Yellow Rain", *International Security*, Vol. 11, No. 4, spring 1987 pp. 41-95.

question was raised and an answer given; however this does not "solve" the problem in terms of the wording of the Convention. It seems that in a given political situation, even a quite complete account of the matters causing concern might not be sufficient to satisfy the Party having doubts. The "co-operation" required in such a case would probably have to go far beyond what was foreseen in the Convention and could necessitate, for example, an on-site visit. Of course, a State willing to dispel serious doubts about its conduct could invite, for instance, an international expert group to the location of the doubtful activity irrespective of the actual provisions of the Convention.

Another public case of suspicion of a breach of the Convention concerns the so-called "yellow rain" affair. The accusations were directed by the United States against the Soviet Union and its allies, namely Laos and Viet Nam, charged with employing the lethal trichothecene mycotoxins (allegedly diffused in the air and falling to the ground as a yellow rain) against the Hmong people in Laos. The accusation was reiterated on numerous occasions, notably by the President of the United States on 17 June 1982 before the United Nations Second Special Session on Disarmament. Similar charges were later directed against the Vietnamese forces in Cambodia, and against the Soviet Union's forces in Afghanistan. Such acts, if substantiated, would constitute a breach of Article I (development of toxins), Article III (transfer of toxins) and Article VIII (use of toxins). It should be noted that all three accused States are Parties to the Convention, although Laos is not Party to the Geneva Protocol of 1925. The Soviet Union, Laos and Vietnam have repeatedly denied the United States' charges. For its part, the Soviet Union responded that the allegations are an effort to divert public opinion from the past crimes of the United States in Viet Nam, to justify the Pentagon's demand for its chemical weapons budget, and to disrupt United States-Soviet relations in general. In a letter to the United Nations Secretary-General the Soviet Union argued that the charges put forward by the United States were based on "circumstantial material of dubious origin".⁵

IV - The Evolution of the Role of the United Nations in the Verification Procedures

Concerns as to the viability of the BW Convention were raised in the United Nations General Assembly during its annual session in 1980. As a result of the debate, the General Assembly, in its Resolution 35/144 of 12 December 1980, requested the United Nations Secretary-General to carry out an impartial investigation of the allegations. This decision marked an historical precedent for the further involvement of United Nations machinery in inquiries of this sort. The task of a group of qualified experts, constituted in pursuance of the General Assembly resolution, was to seek relevant information from all Governments concerned and from other sources, and to collect and examine the evidence, including that gathered during on-site investigations.

⁵ United Nations document A/37/233 of 21 May 1982, p. 1.

Of the States of the region involved, however, only Thailand accepted on-site investigation on its territory.

The report of the group of experts has been inconclusive. From the submissions it had received and on the basis of its assessment of the individual cases presented to it, the group found itself unable to reach a final conclusion as to whether or not toxins (and chemical warfare agents, which were also under investigation) had been used. After a heated debate during the subsequent annual session, the General Assembly approved, on 9 December 1981, Resolution 36/96C in which it requested the United Nations Secretary-General to continue his investigations with the assistance of the group of experts.⁶ In the course of its activities this group undertook on-site visits in Pakistan and Thailand, interviewed the alleged victims as well as the medical personnel, obtained various samples and collected specimens of blood and urine from the alleged victims. As a result of its efforts the group produced a report in which it stated, in reference to the alleged use of toxins, that it was unable "to pin-point any specific chemical warfare agent or other toxic compound as the causative agent. Most of the circumstantial evidence concerning the Hmong allegations is contained in the written submissions" and, further on, "while the group could not state that these allegations had been proven, nevertheless it could not disregard the circumstantial evidence suggestive of the possible use of some sort of toxic substance in some instances".⁷ This report concluded the work of the group of experts.

Apart from the United Nations investigations, several Governments and individual scientists from different countries, including the United States, carried out numerous investigations of the yellow rain phenomenon. Their findings are either as inconclusive as those of the United Nations experts, positive but highly circumstantial, or directly contradict the allegations raised by the United States. The American arguments were based to a great extent on refugee and defector reports, often collected in a dubious manner; on an analysis of a total of 26 samples from South-East Asia, the results of which were not confirmed by a second laboratory; and on circumstantial evidence of Soviet involvement. The issue of yellow rain was raised in a particular political period: a few months after the Soviet invasion of Afghanistan, in the midst of sharp controversies between the US and the USSR on a number of major international issues, in a period of strong and increasing criticism in America against the on-going disarmament efforts. The allegations, whatever their validity, carried the burden of political requirements which often contradict accepted standards of scientific evidence.

Also open to criticism - perhaps even more so - was the response of those States accused of violations. They clearly opposed the idea of investigations being carried out by the United Nations Secretary-General with the assistance of the group of experts; once this was established, they refused to give their consent to on-site investigations. This lack of co-operation contradicts the stipulations of Article V on co-operation through "appropriate international procedures within the framework of the

⁶ *The United Nations Disarmament Yearbook*, Vol. 6, 1981, pp. 229-234.

⁷ *The United Nations Disarmament Yearbook*, Vol. 7, 1982, pp. 330-336.

United Nations". It may be argued that the group of experts had been established by a request of the General Assembly and not by the Security Council, thus not in accordance with the investigative provisions of Article VI. However, whatever the final judgement on the issue may be, it is beyond doubt that such non-co-operation may be considered contradictory to the spirit and objectives of the Convention.

The yellow rain affair illustrates how difficult it is to resolve a question of alleged non-compliance without standards of evidence and clear procedures for investigations being set up in advance by a disarmament treaty.

Although the results of the group of qualified experts investigating the allegations on the use of mycotoxins in South-East Asia were inconclusive, their work was highly regarded by the General Assembly (see Resolution 37/98E of 13 December 1982). This appreciation clearly reflected the desire of a majority of Members of the United Nations to expand the precedent of investigations of alleged breaches of an arms control agreement being carried out under the auspices of the Organization. This majority opinion prevailed over that expressed by a group of States (predominately the socialist and some non-aligned States) that the investigations created a precedent tantamount to the establishment of an *ad hoc* verification mechanism of a treaty which did not foresee such a mechanism; hence such an action constituted, according to this opinion, a *de facto* revision of that treaty.

Following the majority opinion, the General Assembly adopted on 13 December 1982 Resolution 37/98 D on "provisional procedures to uphold the authority of the 1925 Geneva Protocol". The purpose of this action by the UN General Assembly was to provide the international community with an appropriate mechanism for examining facts which, if verified, would constitute violations of the Geneva Protocol.⁸ (For more on the United Nations investigative procedures connected with the violations of the Geneva Protocol, see Chapter 1.)

The investigative procedures established by the United Nations in pursuance of Resolution 37/98D were put to test in 1984 and in following years, and were further elaborated according to General Assembly Resolution 42/37C of 30 November 1987 and to Security Council Resolution 620/1988 of 26 August 1988. All these developments, connected with a desire to expand the role of the Organization in preventing the proliferation and use of chemical weapons helped to establish an investigative mechanism which may have a much wider application in relation to the BW Convention.

V - The Second Review Conference

As noted above, during the First Review Conference a number of States, particularly Sweden, were looking for ways to strengthen the implementation regime of the BW Convention. One of the ideas put forward was the concept of a consultative committee to deal, among other matters, with factfinding procedures. Following these

⁸ United Nations document A/39/488, Annex II.

efforts the General Assembly recommended, in its Resolution 37/98C of 13 December 1982, that States Parties to the Convention should hold a special conference as soon as possible to establish a flexible, objective and non-discriminatory procedure to deal with issues concerning compliance with the Convention. The recommendation was not pursued, however. Instead, attention was devoted to the establishment of the investigative procedures, described above, designed to address the more urgent task of upholding the authority of the 1925 Geneva Protocol.

To the Second Review Conference the participating States came mindful of all the developments discussed above. The Conference was held in Geneva on 8-26 September 1986 with the 63 Parties and four signatories, one observer State and several international organizations present. Before the Conference commenced its deliberations, its Preparatory Committee requested a background document on compliance to be prepared by the Secretariat on the basis of information provided by the States Parties, particularly on the implementation of Article X, concerning co-operation in the peaceful application of biotechnology. In addition, each State Party was requested to submit information on new scientific and technological developments relevant to the Convention. Among the issues debated at the Conference, three (directly related to the verification of compliance) dominated:

- concerns about the implementation of the Convention and ways to strengthen the verification provisions as a means to alleviate such concerns;
- the problem of developments in biotechnology which may endanger the validity of the basic provisions of the Convention;
- the problem of international co-operation in biosciences and biotechnology.⁹

The basic and sharp controversy over the alleged Sverdlovsk and yellow rain incidents, still unresolved for some Parties and always unfounded for others, did not prevent the participants from making constructive efforts to elaborate on mutually acceptable interpretations of the verification provisions of the Convention. It was stressed that the Review Conference did not have the legal power to amend the provisions and thus only pragmatic and limited solutions were deemed possible, building on the flexibility provided by the rather general formulation of the provisions. The purpose of these endeavours was to strengthen the impartiality and the international character of the verification procedures through the expanded involvement of the United Nations Secretary-General, by separating the elaborate factfinding stages of the complaints procedure from considerations of a political and legal character. Concrete proposals were made for a consultative meeting at the expert level as well as a number of measures suggested to allay doubts and misgivings about the activities of States in the area of biosciences and biotechnology.

During the course of the debate all States Parties recognized a need to improve the verification and complaints procedures. Increased assurance of compliance was

⁹ Biological Weapons Convention/CONF.II/13/IV, Geneva 1986.

considered crucial for creating greater confidence in the Convention. It was noticeable that the positions of States traditionally opposed to each other came considerably closer. The most visible change in attitude towards the deficiencies of the verification regime came from the Soviet Union which until this time had opposed any modification to the operation of the Convention. Characteristic of this tendency was the proposal of the Soviet Union and of its allies to convene as early as March 1987 a consultative meeting at an expert level, open to all States Parties to prepare recommendations on:

- the establishment of a group of scientific experts to study the latest biological developments relevant to compliance with the Convention;
- exchanges of data on biological research centres and epidemic diseases;
- broader co-operation among States Parties on the peaceful development and uses of biosciences; and
- preparatory work for a special conference of States Parties to draw up and adopt an additional protocol which would provide measures to strengthen the system of verification of compliance with the Convention.

The importance of developments in biotechnology stems from the anxiety of a number of States as to whether recent scientific developments reopen questions about the military utility of biological weapons. In some countries the view has been expressed that the BW Convention has already been "overtaken by technology".¹⁰ These alarmistic opinions are dismissed by other authoritative sources.¹¹ The fact remains, however, that the rapid growth of a number of facilities involved in basic and applied biological research, the often secretive and dual (civilian-military, defensive-offensive) character of this research, and the enormous potential of its technological applications pose additional and serious responsibilities for the BW Convention's verification.

The issue of international co-operation in the peaceful uses of the biosciences, while raised first of all because of the fundamental concerns of the developing countries, in effect also bears on the general international conditions in which the implementation and verification of the BW Convention take place. All concrete measures to promote international co-operation in the field of biosciences put forward during the Second Review Conference help in building mutual confidence and general knowledge as to the scope and direction of the activities of States in the field covered by the BW Convention.

¹⁰ Statement to the United States Congress on Chemical and Biological Weapons issued by Douglas J. Feith, Deputy Assistant Secretary of Defense for Negotiations Policy, 8 August 1986.

¹¹ For example, the Pugwash Conference on Science and World Affairs expressed the following opinion: 'We concluded that recent alarms about genetic engineering furnishing militarily attractive new "designer agents" had arisen very largely out of ignorance; for as we went down the list of the particular properties that contribute to the aggressiveness of a substance and may make it seem worth weaponizing, we were not able to see how a biotechnological-process product could satisfy them any better than could toxic or infective substances already available'. *Pugwash Newsletter*, Vol. 27, No. 2, October 1989, p. 81.

The Final Declaration of the Second Review Conference, adopted by consensus, reaffirmed strongly that all scientific and technological developments in microbiology, genetic engineering and biotechnology are covered by the scope of Article I.

The Declaration confirmed the conclusion of the First Review Conference that the provisions of Article V on consultations and co-operation included, *inter alia*, the right of any State Party to request a consultative meeting at an expert level open to all States Parties. Moreover, the Declaration states that such a meeting should be convened promptly when requested, that it may consider any problems arising in relation to the objective or the application of the Convention; may suggest ways and means for clarifying any matter considered ambiguous; and, finally, may initiate appropriate international procedures within the United Nations framework. Reflecting the functional, though not formal, relationship between Article V and Article X, in order to enhance confidence in the implementation of the Convention and to improve international co-operation in peaceful biological activities of States, the Final Declaration provided for a number of measures, including the following:

- exchange of data on research centres and laboratories that meet very high safety standards required for handling (for permitted purposes) biological materials that pose a high risk, or specialize in permitted biological materials that pose a high risk or specialize in permitted biological activities directly related to the Convention (until now often operating under strict secrecy);
- exchange of information on all outbreaks of infectious diseases caused by toxins that seem to deviate from the normal pattern of occurrence;
- encouragement of publication of results of biological research related to the Convention and the promotion of these results;
- promotion of contacts between scientists in biological research related to the Convention.

In order to finalize the modalities of all these exchanges and contacts, the Conference decided to convene an *ad hoc* meeting of scientific and technical experts, to be held in Geneva from 31 March to 15 April 1987.

Referring to Article VI the Final Declaration noted "the need to further improve and strengthen" the procedures foreseen under the Article. In particular the Parties agreed that, in carrying out its investigations, the Security Council may request the advice of the World Health Organization.

In connection with Article X, the Declaration recommended that measures to ensure international co-operation be pursued within the United Nations system. The United Nations Secretary-General was requested to include on the agenda of United Nations bodies an "examination of the means for improving institutional mechanisms in order to facilitate the fullest possible exchange of equipment, materials and scientific and technological information for the use of bacteriological (biological) agents and toxins for peaceful purposes".

Finally, the Conference agreed to hold a Third Review Conference, not later than 1991, to consider, among other issues, the effectiveness of the provisions in Article V and of the co-operative measures agreed in the Final Declaration of the Second Review Conference and, in the light of the provisions of Article XI on amendments, "whether or not further actions are called for to create further co-operative measures in the context of Art. V, or legally binding improvements to the Convention, or a combination of both".

As may be seen, the Second Review Conference brought about a set of new commitments, accepted by consensus clearly in order to strengthen the validity of the Convention. Despite the efforts by a number of States and the positive experience gained from the investigative procedures undertaken between the First and the Second Review Conferences in 1980 and 1986, the United Nations Secretary-General was not formally made part of the verification machinery of the BW Convention. However, this does not diminish his highly commendable practical role in the investigation of alleged violations as proven by the experience of previous years. Some of the decisions embodied in the Final Declaration - notably the expansion and transformation of the compliance mechanisms and the introduction of a set of confidence-building measures regarding exchanges of information and co-operation in the peaceful use of biological materials - are controversial in respect of their legally binding character. The Final Declaration is not a treaty; its adoption cannot have the legal strength of an agreement signed and ratified in a due process. However, no State Party can revert to the original text while ignoring the results achieved¹² at the Review Conference, since the latter constitute the subsequent practice agreed to unanimously by States Parties, as defined by the Vienna Convention on the Law of Treaties.

According to the decision taken at the Second Review Conference regarding an *ad hoc* meeting of scientific and technical experts of States Parties, this meeting took place as scheduled. It elaborated a report, adopted by consensus, which contained the modalities for the exchange of information and data (such as standardized forms, questionnaires, terminology and the timing of the exchanges) concerning research centres and laboratories, outbreaks of infectious diseases and similar occurrences caused by toxins, publication of results, promotion of use of knowledge and encouragement of contacts.¹³

According to the modalities agreed at the meeting, the first exchange of information should have been executed by 15 April of the next year, and then annually by 15 October. However, despite the fact that the exchanges were agreed by consensus as a means of strengthening Article V (on co-operation in solving problems) and Article X (on peaceful co-operation), the response of States has not been satisfactory. In 1987 only 18 States, and in 1988 only 23 States, participated in the exchange. The communications contained in the responses vary substantially, from general to very

¹² Winfried Lang, "Taking the Pulse of the Biological Weapons Regime", *Disarmament*, Vol. X, No. 1, winter 1986/87, p. 50.

¹³ BWC/CONF. II/Ex/2 of 21 April 1987.

extensive ones as, for example, that of the Soviet Union which sent a report of 33 pages. Mindful of this limited participation, the General Assembly in its Resolution 43/74B of 7 December 1988 called upon States that have not yet participated in the exchange to do so. However, the subsequent response of Governments has not been very encouraging.

The Third Review Conference is to be held not later than in 1991. It will provide another occasion for taking stock of developments in the implementation of the Convention and of the efforts to strengthen its viability. In Resolution 44/115C of 15 December 1989 the United Nations General Assembly requested the Secretary-General to circulate to the States Parties not later than four months prior to the convening of the Conference a report on the implementation of the confidence-building measures agreed upon by the *ad hoc* meeting of scientific and technical experts.

VI - The Evolution of the Verification Regime of the BW Convention

The BW Convention is a disarmament treaty under considerable criticism and pressure, created by its inherent weaknesses as well as by the dynamics of political and technological development. Although a number of States made it clear that they deemed the Convention to have been violated, they did co-operate with other States Parties to ensure the continuation of its legal validity. This co-operation has permitted the development of a steadily growing web of legal and political commitments and arrangements, strengthening the viability of the Convention and especially its verification provisions. The process of enhancing of the verification regime surrounding the BW Convention has consisted of various stages and elements. First, some of the provisions of the Convention, for example those on a consultative meeting of experts or on the use of international organizations, were interpreted in an expanded way. Second, a practical investigative mechanism was created based on the services provided by the United Nations Secretary-General to validate or invalidate allegations of violation of the Convention and other disarmament treaties. Third, a wide range of confidence-building measures was adopted making the activities of States in the domains of biology and biotechnology more transparent and predictable. Fourth, several States have strengthened their internal legal norms, making a breach of stipulations of the Convention more difficult. Fifth, public support for the further effective operation of the Convention is steadily growing, witness the pressure exerted during a US Congress debate on funds for a new United States Army biological laboratory. Sixth, the attitude of the international community is increasingly supportive of expanded measures leading both to the upholding of the ban contained in the BW Convention and to the strengthening of its verification regime. The last point can be exemplified by the positive change in attitude of the group of socialist States; by the call of the EEC countries to ban the promotion of research in the field of biotechnology and genetic engineering, particularly by military authorities or from

military funds;¹⁴ and by the intention of the United States Government to set up a system of international controls for biological materials similar to that established to stem the spread of chemicals used to make poison gas.¹⁵

It seems that the international verification regime designed to alleviate the weaknesses of some provisions of the BW Convention has been gradually expanding and will develop further. Future progress in the political and technological fields - particularly the former - will determine whether this method of strengthening the Treaty will be sufficient to make additional serious amendment and revision procedures unnecessary.

¹⁴ European Parliament of European Communities, Doc. B 2-750/86 of 8 November 1986.

¹⁵ *The New York Times*, 27 July 1989.

Annexes

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Table 1: Procedures related to the Convention on Biological Weapons of 1972
Main Treaty Provisions and Monitoring and Verification Methods

	Factfinding							Assessment procedures					
	0	1	2	3	4	5	6	7	8	9	10	11	12
Establishment of data base													
Limitation of use													
Limitation of deployment													
Limitation of testing													
Limitation of possession													
Limitation of production													
Limitation of transfer													
Prohibition of use													
Prohibition of deployment													
Prohibition of testing													
Prohibition of possession													
Prohibition of production													
Prohibition of transfer													
Destruction													

0 = No method; 1 = National Technical Means; 2 = Exchange of data; 3 = Consultation; 4 = Control Posts/Observation; 5 = On-site inspection on a State territory; 6 = On-site inspection on a non-State territory; 7 = IAEA Safeguards; 8 = Review Conference; 9 = Submission of report; 10 = Consultation; 11 = Referral to an international organization; 12 = Referral to the International Court of Justice.

For further explanation see also pages 225 and 32-34.

Explanatory note on Table 1

The Convention prohibits the use, deployment, testing, possession and production of Bacteriological (Biological) and Toxin weapons (Article I). Article II specifies the obligation to destroy and Article III specifies the transfer prohibition.

While at the time of signature these weapons did exist, no State had deployed them in a militarily significant way. The objective of the Convention was in the first instance to prevent the development of existing stockpiles, as well as of any new weapons.

Factfinding methods

Verification methods are little specified. States may consult and co-operate amongst themselves (Article V) and may lodge a complaint with the UN Security Council (Article VI, paragraph 1). Investigations following a complaint may be carried out by the Security Council and may include on-site inspections.

Exchange of data as a factfinding method was stressed by the Second Review Conference held in 1986. It stated: "mindful of the provisions of Article V and Article X, and determined to strengthen the authority of the Convention and to enhance confidence in the implementation of its provisions, agrees that the States parties are to implement, on the basis of mutual co-operation, the following measures, in order to prevent or reduce the ambiguities, doubts and suspicions, and in order to improve international co-operation in the field of peaceful bacteriological (biological) activities".

Among measures cited were the following: the exchange of data on relevant research centres and laboratories; exchange of information on outbreaks of infectious disease and similar occurrences caused by toxins that seem to deviate from the normal pattern; encouragement of publication of results of biological research directly related to the Convention; and promotion of contacts between scientists engaged in biological research.

An *ad hoc* meeting of scientific and technical experts was held in 1987 and adopted standardized procedures for the exchange of information and data.

It agreed *inter alia* that information should be provided annually through the Department for Disarmament Affairs of the UN.

Assessment procedures

States Parties may request a Review Conference (Article XII). The consultation mechanism was strengthened and reaffirmed at the Second Review Conference (Article V). States Parties may also refer the matter to the UN Security Council (Article VII).

The Relevant Treaty Articles

CONVENTION ON THE PROHIBITION OF THE DEVELOPMENT, PRODUCTION AND STOCKPILING OF BACTERIOLOGICAL (BIOLOGICAL) AND TOXIN WEAPONS AND ON THEIR DESTRUCTION (10 APRIL 1972, LONDON, MOSCOW AND WASHINGTON)

ARTICLE I

Each State Party to this Convention undertakes never in any circumstances to develop, produce, stockpile or otherwise acquire or retain:

(1) Microbial or other biological agents, or toxins whatever their origin or method of production, of types and in quantities that have no justification for prophylactic, protective or other peaceful purposes;

(2) Weapons, equipment or means of delivery designed to use such agents or toxins for hostile purposes or in armed conflict.

ARTICLE II

Each State Party to this Convention undertakes to destroy, or to divert to peaceful purposes, as soon as possible but not later than nine months after the entry into force of the Convention, all agents, toxins, weapons, equipment and means of delivery specified in Article I of the Convention, which are in its possession or under its jurisdiction or control. In implementing the provisions of this article all necessary safety precautions shall be observed to protect populations and the environment.

ARTICLE III

Each State Party to this Convention undertakes not to transfer to any recipient whatsoever, directly or indirectly, and not in any way to assist, encourage, or induce any State, group of States or international organizations to manufacture or otherwise acquire any of the agents, toxins, weapons, equipment or means of delivery specified in article I of the Convention.

ARTICLE V

The States Parties to this Convention undertake to consult one another and to co-operate in

solving any problems which may arise in relation to the objective of, or in the application of the provisions of, the Convention. Consultation and co-operation pursuant to this Article may also be undertaken through appropriate international procedures within the framework of the United Nations and in accordance with its Charter.

ARTICLE VI

(1) Any State Party to this Convention which finds that any other State Party is acting in breach of obligations deriving from the provisions of the Convention may lodge a complaint with the Security Council of the United Nations. Such a complaint should include all possible evidence confirming its validity, as well as a request for its consideration by the Security Council.

(2) Each State Party to this Convention undertakes to co-operate in carrying out any investigation which the Security Council may initiate, in accordance with the provisions of the Charter of the United Nations, on the basis of the complaint received by the Council. The Security Council shall inform the States parties to the Convention of the results of the investigation.

ARTICLE VII

Each State Party to this Convention undertakes to provide for or to support assistance, in accordance with the United Nations Charter, to any Party to the Convention which so requests, if the Security Council decides that such Party has been exposed to danger as a result of violation of the Convention.

ARTICLE X

(1) The States Parties to this Convention undertake to facilitate, and have the right to participate in, the fullest possible exchange of equipment, materials and scientific and technological information for the use of bacteriological (biological) agents and toxins for peaceful purposes. Parties to the Convention in a position to do so shall also co-operate in contributing individually or together with other States or international organizations to the further development and application of scientific discoveries in the field of bacteriology (biology) for preven-

tion of disease, or of other peaceful purposes.

(2) This Convention shall be implemented in a manner designed to avoid hampering the economic or technological development of States Parties to the Convention or international co-operation in the field of peaceful bacteriological (biological) activities, including the international exchange of bacteriological (biological) agents and toxins and equipment for the processing, use or production of bacteriological (biological) agents and toxins for peaceful purposes in accordance with the provisions of the Convention.

ARTICLE XII

Five years after the entry into force of this Convention, or earlier if it is requested by a majority of Parties to the Convention by submitting a proposal to this effect to the Depositary Governments, a conference of States Parties to the Convention shall be held at Geneva, Switzerland, to review the operation of the Convention, with a

view to assuring that the purposes of the Preamble and the provisions of the Convention, including the provisions concerning negotiations on chemical weapons, are being realized. Such review shall take into account any new scientific and technological developments relevant to the Convention.

ARTICLE XIII

(1) This Convention shall be of unlimited duration.

(2) Each State Party to this Convention shall in exercising its national sovereignty have the right to withdraw from the Convention if it decides that extraordinary events, related to the subject matter of the Convention, have jeopardized the supreme interests of its country. It shall give notice of such withdrawal to all other States Parties to the Convention and to the United Nations Security Council three months in advance. Such notice shall include a statement of the extraordinary events it regards as having jeopardized its supreme interests.

List of Parties

Convention on the Prohibition of the Development,
Production and Stockpiling of Bacteriological (Biological)
and Toxin Weapons and on their Destruction
(as of 31 July 1990)

Afghanistan	1975	Fiji	1973
Argentina	1979	Finland	1974
Australia	1977	France	1984
Austria	1973	Gabon	S
Bahamas	1986	Gambia	S
Bahrain	1988	German Democratic Republic ¹	1972
Bangladesh	1985	Germany, Federal Republic of ¹	1983
Barbados	1973	Ghana	1975
Belgium	1979	Greece	1975
Belize	1986	Grenada	1986
Benin	1975	Guatemala	1973
Bhutan	1978	Guinea-Bissau	1976
Bolivia	1975	Guyana	S
Botswana	S	Haiti	S
Brazil	1973	Honduras	1979
Bulgaria	1972	Hungary	1972
Burundi	S	Iceland	1973
Byelorussian Soviet Socialist Republic	1975	India	1974
Cambodia	1983	Indonesia	S
Canada	1972	Iran, Islamic Republic of	1973
Cape Verde	1977	Iraq	S
Central African Republic	S	Ireland	1972
Chile	1980	Italy	1975
China	1984	Ivory Coast	S
Colombia	1983	Jamaica	1975
Congo	1978	Japan	1982
Costa Rica	1973	Jordan	1975
Cuba	1976	Kenya	1976
Cyprus	1973	Korea, Democratic People's Republic of	1987
Czech and Slovak Federal Republic	1973	Korea, Republic of	1987
Denmark	1973	Kuwait	1972
Dominican Republic	1973	Lao People's Democratic Republic	1973
Ecuador	1975	Lebanon	1975
Egypt	S	Lesotho	1977
El Salvador	S	Liberia	S
Equatorial Guinea	1989	Libyan Arab Jamahiriya	1982
Ethiopia	1975		...

Luxembourg	1976	Senegal	1975
Madagascar	S	Seychelles	1979
Malawi	S	Sierra Leone	1976
Malaysia	S	Singapore	1975
Mali	S	Solomon Islands	1981
Malta	1975	Somalia	S
Mauritius	1972	South Africa	1975
Mexico	1974	Spain	1979
Mongolia	1972	Sri Lanka	1986
Morocco	S	Sweden	1976
Myanmar	S	Switzerland	1976
Nepal	S	Syrian Arab Republic	S
Netherlands	1981	Taiwan	1973
New Zealand	1972	Tanzania, United Republic of	S
Nicaragua	1975	Thailand	1975
Niger	1972	Togo	1976
Nigeria	1973	Tonga	1976
Norway	1973	Tunisia	1973
Pakistan	1974	Turkey	1974
Panama	1974	Ukrainian Soviet Socialist Republic	1975
Papua New Guinea	1980	Union of Soviet Socialist Republics	1975
Paraguay	1976	United Arab Emirates	S
Peru	1985	United Kingdom	1975
Philippines	1973	United States of America	1975
Poland	1973	Uruguay	1981
Portugal	1975	Venezuela	1978
Qatar	1975	Viet Nam	1980
Romania	1979	Yemen Arab Republic ¹	S
Rwanda	1975	Yemen, Democratic Republic of ²	1979
Saint Lucia	1986	Yugoslavia	1973
San Marino	1975	Zaire	1977
Sao Tome and Principe	1979	Zimbabwe	1990
Saudi Arabia	1972		

S means that the Treaty was signed, but no further action has been taken.

¹ In 1990 the two States merged forming Germany.

² In 1990 the two States merged forming the Republic of Yemen.

Chapter 9

The Treaty between the USSR and the USA on the Limitation of Anti-Ballistic Missile Systems (ABM Treaty) (1972)

Mikhail Kokeev and William C. Potter

The Treaty between the USSR and the USA on the Limitation of Anti-Ballistic Missile Systems (signed in Moscow on 26 May, 1972)¹ and the Protocol to that Treaty (signed in Moscow on 3 July, 1974)² introduced the principle of linking the limitation of defensive strategic arms with limitations on offensive strategic weapons. These agreements have contributed greatly to the strengthening of strategic stability and merit careful study at a time when the Soviet Union and the United States are nearing the conclusion of a new strategic arms control accord.³

The purpose of this paper is to analyse the ABM Treaty with particular reference to its verification provisions and the actual practice of verifying compliance with the accord.

I - Basic Objectives of the ABM Treaty

The basic objectives of the ABM Treaty, as modified by the 1974 Protocol, comprise three main elements.

First, the Parties are prohibited from deploying territorial ABM systems or providing a base for such a territorial defence. Each Party can have only one ABM system deployment area having a radius of no more than 150 kilometers. In the USSR that ABM area is situated around Moscow and in the United States it is situated at an ICBM base in Grand Forks, North Dakota.⁴ Verification of compliance with these obligations is to be assured by the use of national technical means.

¹ For the text of the Treaty see *Arms Control and Disarmament Agreements*, US Arms Control and Disarmament Agency, Washington, D.C., 1975, pp. 133-136.

² *Ibid.*, pp. 151-152.

³ For international acknowledgement of the significance of the Treaty see Drell, S.D., Farley, P.J., Holloway, D., "Preserving the ABM Treaty: A Critique of the Reagan Strategic Defense Initiative", *International Security*, Vol. 9, No. 2, Fall 1984, pp. 51-91; Lobov, V., (Col-Gen), "The ABM Treaty: Apprehensions and Hopes", *International Affairs* (Moscow), No. 10, October 1987, pp. 20-26; Bulkeley, R., and Branch, H.G., "The Anti-Ballistic Missile Treaty and World Security", *AFES Press Report*, No. 14, 1988, (Mosbach, Federal Republic of Germany, etc.).

⁴ The 1972 ABM Treaty permitted each side to have two ABM deployment areas, one protecting the capital and one protecting an ICBM launch area. The 1974 Protocol limited each side to only one system. The Soviet system is operational. The US system was dismantled in 1976. See *The Arms Control Reporter* (January 1989), p. 603.

Second, the Parties are prohibited from developing, testing or deploying ABM systems or components which are sea-based, air-based, space-based or mobile land-based.

In this case, opportunities for carrying out verification through national technical means are narrower than in the first case; their effective use is basically to verify that no systems or components are being deployed. In contrast, if the Parties are to verify that no systems or components are being developed or tested, they will require far-reaching on-site verification including inspections and the opening of laboratories.

Regrettably, there were no clearly agreed definitions in the text of the accord of such keyterms as "development", "tests", "deployment" and "components". The lack of such agreed definitions has contributed to a long and bitter debate about the interpretation of the Treaty,⁵ especially about how obligations under the Treaty relate to the content of the Strategic Defense Initiative.⁶ This issue is discussed in more detail below.

Finally, the third group of basic obligations assumed by the Parties relates to agreed Statement D to the Treaty, which says that the development of fundamentally new ABM systems is allowed only in the areas permitted by the 1972 Treaty; the deployment of such systems is subject to agreement by the Parties, and the systems themselves must be fixed and land-based.

II - Verification Provisions

The ABM Treaty, like other arms limitation agreements concluded at that time, provides for verification measures and a mechanism to promote the objectives and implementation of the provisions of the Treaty, giving priority to national technical

⁵ For this discussion see Garthoff, R.L., *Policy versus the Law: The Reinterpretation of the ABM Treaty*, Washington, D.C., the Brookings Institution, 1987, 117 p.; Goldblat, J., "New Means of Ballistic Missile Defence: The Question of Legality and Arms Control Implication", *Arms Control*, Vol. 5, No. 2, Sept. 1984, pp. 176-179; Nunn, S., "The ABM Reinterpretation Issue", *The Washington Quarterly*, Vol. 10, No. 4, autumn 1987, pp. 45-58; Sherr, A.B., "Sound Legal Reasoning or Policy Expedient? The New Reinterpretation of the ABM Treaty", *International Security*, Vol. 11, No. 3, winter 1986-87, pp. 71-93; Semyonov, V., Surikkov, B., "The ABM Treaty: Barrier to Star Wars", *International Affairs* (Moscow), No. 8, August 1987, pp. 19-27. A-UNLG, United States Congress, Review of ABM Treaty Interpretation Dispute and SDI, Hearings, Feb. 26, 1987, Subcommittee on Arms Control and International Security of the Committee on Foreign Relations, Washington, D.C., USGPO, 173 p., and Bunn, *The ABM Treaty and National Security*, Washington, D.C., The Arms Control Association, 1990, pp. 58-73.

⁶ For a discussion on the subject see Kennedy, E., (Sen.), "Star Wars vs the ABM", *Arms Control Today*, Vol. 14, No. 6, July/August 1984, pp. 1, 18-19, 24; Krepon, M., "Dormant Threat to the ABM Treaty", *The Bulletin of the Atomic Scientists*, January 1986, pp. 31-34; Levin, C., "Administration Wrong on ABM Treaty", *The Bulletin of the Atomic Scientists*, April 1987, pp. 30-33; Pilat, J., "Star Peace: Soviet Space Control Strategy and Objectives", *The Washington Quarterly*, "What Does Moscow Think?", *Foreign Policy*, No. 59, Summer 1985, pp. 85-105; Schenleiter, G.R., "Implications of the Strategic Defense Initiative for the ABM Treaty", *Survival*, Vol. XXVII, No. 5, Sept/Oct. 1985, pp. 213-225; Weinrod, W.B., "Strategic Defense and the ABM Treaty", *The Washington Quarterly*, Vol. 9, No. 3, summer 1986, pp. 73-87.

means of verification (NTMs) and co-operative measures. Specifically, the Treaty provides that the Parties shall use NTMs in a manner consistent with generally recognized principles of international law and contains an obligation not to interfere with the national technical means of verification of the other Party. Each Party undertook not to use deliberate concealment measures which impede verification by national technical means of compliance with the provisions of the Treaty. It was specified that this obligation should not require changes in current construction, assembly, conversion or overhaul practices.

To promote the objectives and implementation of the provisions of the Treaty, the sides agreed to establish promptly a Standing Consultative Commission (SCC), a mechanism common both to the ABM Treaty, the Interim Agreement on Certain Measures with respect to the Limitation of Strategic Offensive Arms of 26 May 1972 (SALT I), and the Agreement on Measures to Reduce the Risk of Outbreak of Nuclear War between the USSR and the United States, signed on 30 September 1971.⁷

The responsibilities of the SCC, agreed upon soon after the Treaty was signed, offer a broad spectrum of opportunities to hold a dialogue on the progress of implementing the Treaty obligations and do not rule out the possibility of discussing, within the framework of that dialogue, the development of the verification system. Those responsibilities are: to consider questions concerning compliance with the obligations assumed and related situations which may be considered ambiguous; to provide on a voluntary basis such information as either Party considers necessary to assure confidence in compliance with the obligations assumed; to consider questions involving unintended interference with national technical means of verification; to consider possible changes in the strategic situation which have a bearing on the provisions of this Treaty; to agree upon procedure and data for destruction or dismantling of ABM systems and strategic offensive arms; to consider, as appropriate, possible proposals for further increasing the viability of the agreements; and to consider, as appropriate, proposals for further measures aimed at limiting strategic arms. On that basis the Parties agreed on the Regulations of the SCC governing its procedures, composition as well as other matters.

It should be noted that the SCC drew up two protocols regarding Procedures Governing Replacement, Dismantling or Destruction, and Notification Thereof, for ABM Systems and their Components, as well as Procedures Governing Replacement, Disarmament or Destruction, and Notification Thereof, for Strategic Offensive Arms, both signed in Moscow on 3 July 1974.

In the Memorandum of Understanding regarding the Standing Consultative Commission signed on 21 December 1972, the Parties undertook to hold meetings of the Commission no less than two times per year. Since then nearly 40 meetings have been held. In addition, the Parties jointly carry out a review of the ABM Treaty at

⁷ See Dan Caldwell, "The Standing Consultative Commission: Past Performance and Future Possibilities", in William C. Potter, ed., *Verification and Arms Control*, Lexington, MA, Lexington Books, 1985, pp. 217-230.

five-yearly intervals after the entry into force of the Treaty. Two reviews at special sessions of the SCC were held in 1977 and 1982. A third review, outside of the SCC, was held in August 1988.

In 1977, on the occasion of the first five-year review, the USSR and the US agreed that the Treaty was functioning effectively and reaffirmed their mutual commitment to the objectives and provisions of the Treaty, as well as their desire to maintain and further enhance its viability and effectiveness. In 1982, at the second five-year review, the USSR and the US reaffirmed their commitment to the objectives and goals of the Treaty, as well as the process of consultations within the framework of the SCC and the Protocol to the Treaty of 3 July 1974. However, the third review conference, held in Geneva in 1988, ended in discord over the issue of the Krasnoyarsk radars.

III - Actual Verification Practice

The actual verification practice under the ABM Treaty includes two major components: the use of NTM, and co-operative efforts within the Standing Consultative Commission. There has been little controversy regarding the first component; NTMs have been generally judged to be effective in carrying out their verification tasks. The practice of the SCC has been more contentious, especially during the mid-1980s when the activities of the SCC tended to focus on mutual accusations of non-compliance. Subsequently, however, the situation has improved, marked by steps aimed at resolving the concerns of both sides.

US doubts about Soviet compliance with the ABM Treaty have centred on the construction of the so-called "Krasnoyarsk radar", discovered in 1983 and, to a lesser extent, on the movement of parts of dismantled radars to the cities of Gomel and Vnukovo in 1987. President Bush's February 1990 report on Soviet compliance behaviour cited both developments as violations of the ABM Treaty.⁸

The discovery of a large phased-array radar under construction at Abalakova, north of the Siberian city of Krasnoyarsk and over 700 kilometers from the nearest Soviet frontier led the United States to raise the issue of the radar's legality at the SCC in the autumn of 1983. Since the ABM Treaty only permits new early warning radar that are oriented outward and are deployed on the periphery of the country, the United States argued that the radar at Krasnoyarsk was illegal at its inland site. The Soviet Union, however, maintained that the facility was designed as a space-tracking radar and therefore was not prohibited under the terms of the ABM Treaty. This argument, in turn, was dismissed by the United States which claimed that the radar resembled other Soviet early warning radars, was deployed at a site that covered a major gap in Soviet early warning coverage, and was unlike the normal configuration of a space-tracking

⁸ See *Soviet Non-Compliance with Arms Control Agreements*, Washington, D.C., The White House, February 23, 1990.

system in its design and orientation. The United States insisted upon the complete dismantling of the radar, without preconditions.⁹

The Soviet position with respect to the radar near Krasnoyarsk evolved gradually from outright denial of the US charges, to an offer in October 1985 to cease construction at Krasnoyarsk in exchange for a halt in US construction of two early warning radars at Thule (Greenland) and Fylingdales Moor (United Kingdom); then, finally, to a unilateral moratorium on construction at Krasnoyarsk following the September 1987 site visit of a team of US congressmen and experts.¹⁰ This offer was followed by a proposal in July 1988 to dismantle the radar equipment while retaining the structure if the United States accepted the traditional narrow interpretation of the ABM Treaty. Following the unsuccessful conclusion of the third ABM Treaty Review Conference in August 1988, the Soviet Union proposed to convert Krasnoyarsk into an internationally operated space research centre.

Finally, in September 1989, at the ministerial talks in Wyoming between US Secretary of State James Baker and Soviet Foreign Minister Eduard Shevardnadze, the Soviet Union agreed to eliminate completely the Krasnoyarsk radar.¹¹ This action was followed by the acknowledgement by Foreign Minister Shevardnadze before the Supreme Soviet in October 1989 that the radar near Krasnoyarsk constituted a violation of the ABM Treaty.¹² He emphasized that the elimination of the radar would clear the way for a START Agreement and would lead to the clarification of issues related to the US radars in Greenland and the United Kingdom the modernization of which, in the opinion of the Soviet Union, violated the ABM Treaty. By mid-1990, work to dismantle the Krasnoyarsk radar had apparently begun.¹³

The acknowledgement by the Soviet Union that the Krasnoyarsk radar was a clear violation of the ABM Treaty and the Soviet leadership's decision to dismantle the facility in its entirety go a long way to restoring the integrity of the ABM Treaty and the SCC process. The resolution of the Krasnoyarsk issue also highlights the importance of persistently pressing for the remedying of obvious and continuing compliance violations, while avoiding precipitous responses to alleged treaty violations. As one astute observer noted,

Had the United States repudiated the ABM Treaty in response to Krasnoyarsk ... the Soviet Union would have had no incentive to ultimately dismantle the radar ... and the current prospects for substantial offensive arms reductions would not exist.¹⁴

⁹ See Matthew Bunn, *Foundation for the Future: The ABM Treaty and National Security*, Washington, D.C., The Arms Control Association, 1990, pp. 74-78.

¹⁰ See T.S. Downey, B. Carr, and J. Moody, "Report from Krasnoyarsk," *Bulletin of the Atomic Scientists*, November 1987, pp. 11-14.

¹¹ *Pravda*, September 25, 1989.

¹² *Izvestia*, October 24, 1989.

¹³ See *Arms Control Reporter*, July 1990, p. 603.B.188.

¹⁴ Bunn, p. 78.

Aside from Krasnoyarsk, the most controversial issue concerning Soviet ABM Treaty compliance involved the charge that it had deployed parts of ABM radars at Gomel, a city in Byelorussia, and at Vnukovo, near Moscow. More specifically, the United States claimed that in 1987 the Soviet Union had violated Articles III and IV of the ABM Treaty by taking parts from the so-called Flat Twin and Pawn Shop radars that were legally deployed at the ABM test range in Sary Shagan and redeploying them at sites that were neither permitted ABM deployment areas nor ABM test ranges. The Soviet Union denied the accusations and maintained that the radar parts were intended for the civilian economy.

In order to meet US concerns, the Soviet Union offered to allow US inspectors to examine the radar parts in question near Gomel and Moscow. Although the US team which visited the sites in December 1987 reportedly observed that the radar parts were not assembled, the United States continued to assert that their presence constituted illegal "deployment".¹⁵ The Soviet Union subsequently proposed to destroy the remaining radar parts and did so in December 1988. The February 1990 US report on Soviet compliance behaviour acknowledged that the radar parts had been destroyed, and cited that action as a positive step.¹⁶ The disagreement now appears to have receded in importance and illustrates how SCC deliberations can help to reduce US-Soviet friction and increase mutual confidence.

Soviet construction of the Krasnoyarsk radar represents the only clear cut instance in which either Party has violated the terms of the ABM Treaty. On a number of occasions, however, US behaviour has also been the subject of Soviet charges of treaty non-compliance. The two areas of greatest concern to the Soviet Union have been the construction of early warning radars at Thule (Greenland) and Fylingdales (United Kingdom) and completed and planned US Strategic Defense Initiative (SDI) experiments.¹⁷

Shortly after the United States broached the issue of Krasnoyarsk in the SCC in 1983, the Soviet Union raised question in the Commission about US plans to modernize the early warning radars at Thule and Fylingdales. According to the Soviet Union, construction at the two facilities involved new early warning radars with entirely new technology at locations not on the periphery of the United States and thus in violation of the ABM Treaty. The United States rejected this charge, insisting that the modernization was consistent with a still secret agreement negotiated in the SCC that reportedly allows "modernization by replacement".¹⁸ In 1985, the issue became public when the Soviet Union sought to link a halt in construction at Krasnoyarsk with US cessation of work at Thule and Fylingdales.

The Soviet Union has continued to charge that the upgraded Thule and Fylingdales radars constitute ABM Treaty violations. However, the issue has become

¹⁵ *Ibid.*

¹⁶ See *Arms Control Reporter*, March 1990, p. 603.D.18.

¹⁷ For a more comprehensive discussion of Soviet accusations of US Treaty violations see *The Arms Control Reporter* and Bunn, pp. 90-109.

¹⁸ See Bunn, p. 100.

less contentions since February 1990 when the United States agreed to allow Soviet experts to visit the two facilities.¹⁹ The Soviet Union now appears unlikely to link the status of the Thule and Fylingdales radars to progress on other arms control fronts and recently dropped its earlier calls for the two radars to be dismantled.²⁰ Moreover, US inspectors have been invited to visit similar radar facilities in the Soviet Union as a measure to build confidence. The US Strategic Defense Initiative has been the other primary source of Soviet concern regarding US ABM Treaty compliance behaviour. Although to date no SDI test has unambiguously violated the ABM Treaty, some past and planned experiments extend far into the "grey areas" of the treaty and raise disturbing questions about treaty compliance.

It is not possible within the confines of this chapter to analyse the complex legal and technical issues involved in the US "reinterpretation" of the Treaty and the dozens of major experiments conducted or planned in support of the US SDI programme.²¹ It is sufficient to note that the United States and the Soviet Union disagree strongly on what is and is not permitted under the ABM Treaty. There are also major ambiguities in the Treaty which complicate the determination of compliance behaviour with respect to such issues as permitted research and prohibited development, testing of ABM "components", and testing "in an ABM mode".

Fortunately, the period of accusations and mutual recrimination in the early and mid- 1980s has been replaced by one of less harsh rhetoric and more serious efforts at negotiations. An important step in this process was taken with the acceptance of the Washington formula of 10 December 1987 which reads as follows:

Taking into account the preparation of the Treaty on strategic offensive arms, the leaders of the two countries also instructed their delegation in Geneva to work out an agreement that would commit the sides to observe the ABM Treaty, as signed in 1972, while conducting their research, development and testing as required, which are permitted by the ABM Treaty, and not to withdraw from the ABM Treaty, for a specified period of time. Intensive discussions of strategic stability shall begin not later than 3 years before the end of the specified period, after which, in the event the sides have not agreed otherwise, each side will be free to decide its course of action. Such an agreement must have the same legal status as the Treaty on Strategic Offensive Arms, the ABM Treaty and other similar legally binding agreements. This agreement will be recorded in a mutually satisfactory manner. Therefore, they direct their delegations to address these issues on a priority basis.²²

Although the Washington Summit reflected an interested effort by both sides to narrow their differences, in fact the substance of their positions remained diametrically

¹⁹ See *Izvestia*, February 11, 1990.

²⁰ See Bunn, p. 101.

²¹ For a useful review of those issues see Raymond C. Garthoff, *Policy Versus the Law: The Reinterpretation of the ABM Treaty*, Washington, DC, The Brookings Institution, 1987; Senator Sam Nunn, "Interpretation of the ABM Treaty: Parts I, II, III and IV", *The Congressional Record*, March 11, 12, 13 and 19, 1987, and Bunn, pp. 58-73 and 90-109.

²² "Bulletin of the Ministry of Foreign Affairs of the USSR", No. 10, December 25, 1987, p. 15.

opposed. The Soviet Union proposed a draft START Treaty in January 1988 with a Defence and Space agreement protocol which incorporated the ambiguous summit language, but indicated that both Parties would be bound by the traditional ABM Treaty interpretation. US negotiators responded the following week with a separate draft treaty on Defence and Space which reportedly also retained the summit communique's language on the ABM Treaty, but without foreclosing a broad interpretation. Two months later, the United States also tabled a protocol to the Defence and Space agreement that laid out specific "predictability measures", including annual briefings on projected ABM activities, visits to selected space defence laboratories and monitoring of ABM tests.²³

The March 1988 ministerial meeting in Washington between Secretary of State Shultz and Foreign Minister Shevardnadze failed to make much headway on the substantive issues which divide the Parties on the ABM Treaty interpretation. The two sides, however, did agree to prepare a joint draft treaty which would be "a separate agreement building on the language of the 10 December 1987 joint Statement".²⁴ The following month, Soviet negotiator Viktor Karpov reported that the United States and the Soviet Union had agreed that a Defence and Space agreement would include a protocol "dealing with verification, predictability, and several other points which could make this agreement more effective towards observing the ABM Treaty".²⁵ At the May/June 1988 Reagan-Gorbachev summit in Moscow, Gorbachev then announced the Soviet Union's response to the prior US "predictability package". This comprised a set of measures including the following:

- exchange of data related to work in the area of ABM defences, experts meetings and reciprocal visits to test sites where work in that area is carried out;
- exchange of information to prevent ambiguities over compliance by the Parties with obligations assumed;
- verification of compliance with their obligations, including inspections of facilities of concern to the sides;
- consultations to examine situations which, in the view of either side, jeopardize its supreme interests. In the course of such consultations, the sides would use all available measures to resolve such situations on a mutually acceptable basis.

This slow convergence of positions made possible the drafting in Geneva of a joint, heavily bracketed text of a protocol to an agreement on Defence and Space regarding verification and predictability measures.

²³ Bunn, p. 175.

²⁴ *Ibid.*, p. 176.

²⁵ Cited by Bunn, p. 176.

A major step towards conclusion of a START treaty in the absence of a Defence and Space agreement was taken in September 1989 at the Wyoming meeting of foreign ministers. During these talks, Foreign Minister Eduard Shevardnadze formally decoupled START from Defence and Space and indicated that the Soviet Union was "ready to sign and ratify the START treaty even if, by the time it is completed, an agreement on the ABM problem will not yet have been reached, provided of course, that both sides would continue to comply with the ABM Treaty as signed in 1972".²⁶ It was also agreed during the talks to abandon the approach of an ABM Treaty non-withdrawal commitment, but at the same time to proceed with talks on Defence and Space in order to achieve predictability in the Soviet-US relationship in conditions of strategic stability.

The common understanding reached in Wyoming paved the way for a businesslike and non-confrontational discussion of the entire set of arms control issues, including the verification regime of the ABM Treaty. Although the continuing to dispute what activities are permitted under the ABM Treaty, the Parties have tentatively agreed to "annual data exchanges on planned development, testing, deployment, modernization and replacement of ABM systems and components, as well as annual experts meetings to review the exchange data and consider possible visits to observe ABM-related testing".²⁷ The Soviet Union also accepted the US invitation at Wyoming to send technical experts to visit two SDI research facilities; in December 1989 a ten-member Soviet delegation toured TWR's Alpha chemical laser site in San Juan Capistrano (California) and the neutral particle beam lab at Los Alamos National Laboratory.²⁸

IV - Conclusion

Today, 18 years after the signature of the ABM Treaty, it is easy to find fault with certain aspects of it, especially with respect to ambiguities in its language. It is also tempting to question the adequacy of the Treaty's verification provisions in light of the sophisticated verification methods established by the INF Treaty. This chapter's review of verification practice under the ABM Treaty, however, suggests that despite its limitations, the verification procedures set forth in 1972 have managed to evolve, as has the political relationship between the two sides. One should also not lose sight of the fact that many of the opportunities and limitations of the Treaty's verification

²⁶ Cited by Bunn, p. 178.

²⁷ Bunn, p. 178.

²⁸ Some analysts suggest that the Soviet Union may have been reluctant to endorse the more general US proposal to extend predictability measures (such as data exchanges and visits to SDI research facilities) because the ABM Treaty does not prohibit research and because it regards the predictability protocol mainly as a means to enhance verification of the traditional interpretation of the Treaty. See, for example, Bunn, p. 178. The Soviet Union, however, did invite a US Congressional delegation to visit the operation of a one megawatt laser at the Troisk branch of the Kurchatov Institute of Atomic Energy in the autumn of 1989.

system were recognized by both sides at the time of the Treaty's negotiation and signature. The negotiators understood that the ABM Treaty, like any treaty, was not a substitute for a sound political relationship although it could help to nurture and solidify such a relationship.

The history of arms control negotiations since World War II is a record of controversy over verification issues. The controversy may not have ended, but a new phase of arms control negotiations appears to have begun, a phase in which verification is no longer the primary obstacle to agreement. Indeed, it is no longer wishful thinking to believe that, building on the unprecedented INF Treaty model, verification systems can contribute significantly to the establishment of a new security system ensured by political means. In such a system, trust enhances verification and verification breeds trust.

Annexes

Select Bibliography

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Table 1: Procedures related to the ABM Treaty of 1972
Main Treaty Provisions and Monitoring and Verification Methods

	Factfinding							Assessment procedures					
	0	1	2	3	4	5	6	7	8	9	10	11	12
Establishment of data base													
Limitation of use													
Limitation of deployment													
Limitation of testing													
Limitation of possession													
Limitation of production													
Limitation of transfer													
Prohibition of use													
Prohibition of deployment													
Prohibition of testing													
Prohibition of possession													
Prohibition of production													
Prohibition of transfer													
Destruction													

0 = No method; 1 = National Technical Means; 2 = Exchange of data; 3 = Consultation; 4 = Control Posts/Observation; 5 = On-site inspection on a State territory; 6 = On-site inspection on a non-State territory; 7 = IAEA Safeguards; 8 = Review Conference; 9 = Submission of report; 10 = Consultation; 11 = Referral to an international organization; 12 = Referral to the International Court of Justice.

For further explanation see also pages 244 and 32-34.

Explanatory note on Table 1

Article I of the ABM Treaty limits deployment of ABM systems; Article V limits testing and production; Article IX prohibits transfer of ABM systems, and Article VIII specifies destruction of ABM systems.

Factfinding methods

The prohibitive and restrictive clauses of the Treaty are verified through NTMs and through Exchange of Data and Consultation (see Article XIII).

Assessment procedures

Assessment of facts may take place in the Standing Consultative Commission created by Article XIII. Article XIV, paragraph 2, provides for a periodic review of the Treaty.

The Relevant Treaty Articles

TREATY BETWEEN THE USA AND THE USSR ON THE LIMITATION OF ANTI-BALLISTIC MISSILE SYSTEMS (ABM TREATY) (26 MAY 1972, MOSCOW)

ARTICLE I

1. Each Party undertakes to limit anti-ballistic missile (ABM) systems and to adopt other measures in accordance with the provisions of this Treaty.

2. Each Party undertakes not to deploy ABM systems for a defense of the territory of its country and not to provide a base for such a defense, and not to deploy ABM systems for defense of an individual region except as provided for in Article III of this Treaty.

ARTICLE III

Each party undertakes not to deploy ABM systems or their components except that:

(a) within one ABM system deployment area having a radius of one hundred and fifty kilometers and centered on the Party's national capital, a Party may deploy: (1) no more than one hundred ABM interceptor missiles at launch sites, and (2) ABM radars within no more than six ABM radar complexes, the area of each complex being circular and having a diameter of no more than three kilometers; and

(b) within one ABM system deployment area having a radius of one hundred and fifty kilometers and containing ICBM silo launchers, a Party may deploy: (1) no more than one hundred ABM launchers and no more than one hundred ABM interceptor missiles at launch sites, (2) two large phased-array ABM radars comparable in potential to corresponding ABM radars operational or under construction on the date of signature of the Treaty in an ABM system deployment area containing ICBM silo launchers, and (3) no more than eighteen ABM radars each having a potential less than the potential of the smaller of the above-mentioned two large phased-array ABM radars.

ARTICLE V

1. Each Party undertakes not to develop, test, or deploy ABM systems or components which are sea-based, air-based, space-based, or mobile land-based.

2. Each Party undertakes not to develop, test, or deploy ABM launchers for launching more than one ABM interceptor missile at a time from each launcher, nor to modify deployed launchers to provide them with such a capability, nor to develop, test, or deploy automatic or semi-automatic or other similar systems for rapid reload of ABM launchers.

ARTICLE VI

To enhance assurance of the effectiveness of the limitations on ABM systems and their components provided by this Treaty, each Party undertakes:

(a) not to give missiles, launchers, or radars, other than ABM interceptor missiles, ABM launchers, or ABM radars, capabilities to counter strategic ballistic missiles or their elements in flight trajectory, and not to test them in an ABM mode; and

(b) not to deploy in the future radars for early warning of strategic ballistic missile attack except at locations along the periphery of its national territory and oriented outward.

ARTICLE VII

Subject to the provisions of this Treaty, modernization and replacement of ABM systems or their components may be carried out.

ARTICLE VIII

ABM systems or their components in excess of the numbers or outside the areas specified in this Treaty, as well as ABM systems or their components prohibited by this Treaty, shall be destroyed or dismantled under agreed procedures within the shortest possible agreed period of time.

ARTICLE IX

To assure the viability and effectiveness of this Treaty, each Party undertakes not to transfer to other States, and not to deploy outside its national territory, ABM systems or their components limited by this Treaty.

ARTICLE XII

(1) For the purpose of providing assurance of compliance with the provisions of this Treaty, each Party shall use national technical means of verification at its disposal in a manner consistent with generally recognized principles of international law.

(2) Each Party undertakes not to interfere with the national technical means of verification of the

other Party operating in accordance with paragraph 1 of this Article.

(3) Each Party undertakes not to use deliberate concealment measures which impede verification by national technical means of compliance with the provisions of this Treaty. This obligation shall not require changes in current construction, assembly, conversion, or overhaul practices.

ARTICLE XIII

(1) To promote the objectives and implementation of the provisions of this Treaty, the Parties shall establish promptly a Standing Consultative Commission, within the framework of which they will:

(a) consider questions concerning compliance with the obligations assumed and related situations which may be considered ambiguous;

(b) provide on voluntary basis such information as either Party considers necessary to assure confidence in compliance with the obligations assumed;

(c) consider questions involving unintended interference with national technical means of verification;

(d) consider possible changes in the strategic situation which have a bearing on the provisions of this Treaty;

(e) agree upon procedures and dates for destruction or dismantling of ABM systems or their components in cases provided for by the provisions of this Treaty;

(f) consider, as appropriate, possible proposals for further increasing the viability of this Treaty, including proposals for amendments in accordance with the provisions of this Treaty;

(g) consider, as appropriate, proposals for further measures aimed at limiting strategic arms.

(2) The Parties through consultations shall establish, and may amend as appropriate, Regulations for the Standing Consultative Commission governing procedures, composition and other relevant matters.

ARTICLE XIV

(...)

(2) Five years after entry into force of this Treaty, and at five year intervals thereafter, the Parties shall together conduct a review of this Treaty.

ARTICLE XV

(1) This Treaty shall be of unlimited duration.

(2) Each 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 jeopardized its supreme interests. It shall give notice of its decision to the other Party six months prior to withdrawal from the Treaty. Such notice shall include a statement of the extraordinary events the notifying Party regards as having jeopardized its supreme interests.

COMMON UNDERSTANDINGS

D. Standing Consultative Commission

Ambassador Smith made the following statement on May 22, 1972:

The United States proposes that the sides agree that, with regard to initial implementation of the ABM Treaty's Article XIII on the Standing Consultative Commission (SCC) and of the consultation Articles to Interim Agreement on offensive arms and the Accidents Agreement, agreement establishing the SCC will be worked out early in the follow-on SALT negotiations; until that is completed, the following arrangements will prevail: when SALT is in session, any consultation desired by either side under these Articles may be carried out by the two SALT Delegations; when SALT is not in session, *ad hoc* arrangements for any desired consultations under these Articles may be made through diplomatic channels.

Minister Semenov replied that, on an *ad referendum* basis, he could agree that the US statement corresponded to the Soviet understanding.

MEMORANDUM OF UNDERSTANDING BETWEEN THE USA AND THE USSR REGARDING THE ESTABLISHMENT OF A STANDING CONSULTATIVE COMMISSION (21 DECEMBER 1972)

I

The Government of the United States of America and the Government of the Union of Soviet Socialist Republics hereby establish a Standing Consultative Commission.

II

The Standing Consultative Commission shall promote the objectives and implementation of the

provisions of the Treaty between the USA and the USSR on the Limitation of Anti-Ballistic Missile systems of 26 May 1972, the Interim Agreement between the USA and the USSR on Certain Measures with respect to the Limitation of Strategic Offensive Arms of 26 May 1972, and the Agreement on Measures to reduce the risk of Outbreak of Nuclear War between the USA and the USSR of September 30, 1971, and shall exercise its competence in accordance with the provisions of Article XIII of said Treaty, Article VI of said Interim Agreement and Article 7 of said Agreement on Measures.

III

Each Government shall be represented on the Standing Consultative Commission by a Commissioner and a Deputy Commissioner, assisted by such staff as it deems necessary.

IV

The Standing Consultative Commission shall hold periodic sessions on dates mutually agreed by the Commissioners but no less than two times per year. Sessions shall also be convened as soon as possible, following reasonable notice, at the request of either Commissioner.

V

The Standing Consultative Commission shall establish and approve Regulations governing procedures and other relevant matters and may amend them as it deems appropriate.

VI

The Standing Consultative Commission will meet in Geneva. It may also meet at such other places as may be agreed.

PROTOCOL, WITH REGULATIONS, REGARDING THE US-SOVIET STANDING CONSULTATIVE COMMISSION (30 MAY 1973)

PROTOCOL

Pursuant to the provisions of the Memorandum of Understanding between The Government of the United States of America and the Government of the Union of Soviet Socialist Republics regarding the establishment of a Standing Consultative Commission, dated December 21, 1972, the under-

signed, having been duly appointed by their respective Governments as Commissioners of said Standing Consultative Commission, hereby establish and approve, in the form attached, Regulations governing procedures and other relevant matters of the Commission, which Regulations shall enter into force upon signature of this Protocol and remain in force until and unless amended by the undersigned or their successors.

ATTACHMENT

REGULATIONS

1. The Standing Consultative Commission, established by the Memorandum of Understanding between The Government of the United States of America and the Government of the Union of Soviet Socialist Republics Regarding the Establishment of a Standing Consultative Commission, dated December 21, 1972, shall consist of a US component and Soviet component, each of which shall be headed by a Commissioner.

2. The Commissioners shall alternately preside over the meetings.

3. The Commissioners shall when possible, inform each other in advance of the matters to be submitted for discussion, but may at a meeting submit for discussion any matter within the competence of the Commission.

4. During intervals between sessions of the Commission, each Commissioner may transmit written or oral communications to the other Commissioner concerning matters within the competence of the Commission.

5. Each component of the Commission may invite such advisers and experts as it deems necessary to participate in a meeting.

6. The Commission may establish working groups to consider and prepare specific matters.

7. The results of the discussion of questions at the meetings of the Commission may, if necessary, be entered into records which shall be in two copies, each in the English and the Russian languages, both texts being equally authentic.

8. The proceedings of the Standing Consultative Commission shall be conducted in private. The Standing Consultative Commission may not make its proceedings public except with the express consent of both Commissioners.

9. Each component of the Commission shall bear the expenses connected with its participation in the Commission.

Chapter 10

SALT I and SALT II (1972, 1979)

Ellis Morris

The two bilateral agreements between the United States of America and the Union of Soviet Socialist Republics on the limitation of strategic nuclear arms, the 1972 Interim Agreement (SALT I) and the 1978 SALT II Treaty, provide a number of valuable lessons in the study of verification. SALT I set upper limits on the number of land- and sea-based strategic nuclear missiles. SALT II placed additional limits on the number of strategic nuclear delivery vehicles, including long-range bombers and air-to-surface ballistic missiles. Negotiations over verification provisions presented major problems to the delegations and influenced the form and substance of the final agreements.

Both agreements relied on the use of national technical means (NTM) of verification to provide assurance that the terms of the agreements were being respected. Both Parties undertook "co-operative measures" to augment and supplement their NTM. They agreed not to interfere with each other's national technical means of verification and not deliberately impede verification through concealment. Most importantly, the two Parties agreed to establish the Standing Consultative Commission as a mechanism for discussion to resolve ambiguities and misunderstandings and to further the process of arms control verification. In addition to the quantitative limits, the SALT agreements also included qualitative limits on weapon systems; however, negotiation of verification provisions for these limits proved much more difficult. Analysis of the role of verification in the negotiation and implementation of these particular agreements provides valuable insights into the role of verification in arms control and disarmament, more generally.

I - SALT I

The first series of strategic arms limitation talks concluded in 1972 and resulted in two agreements: a treaty that limited the deployment of Anti-Ballistic Missile (ABM) systems and an executive agreement that set upper limits on the number of Land-Based Intercontinental Ballistic Missile (ICBM) and Sea-Launched Ballistic Missile (SLBM) launchers deployed by both sides. The net result of these two agreements was a rough strategic balance that was not intended to be an end in itself, but to serve as the basis for further negotiations whose ultimate aim was to produce a situation of overall parity at a much lower level of total deployment.¹ The Interim Agreement on the Limitation of Strategic Arms (SALT I) temporarily froze the deployment of land- and sea-based offensive strategic missiles at the number already operational or under construction at

¹ Gerard Smith, *Doubletalk: The Story of the First Strategic Arms Limitation Talks*, New York, Doubleday, 1980, pp. 20-21.

the time of signing.² The original intention of the negotiations had been to develop a treaty of unlimited duration which would set low limits on strategic nuclear weapons. When that goal proved unattainable, the two sides developed a five-year interim agreement with the intention of undertaking follow-on negotiations to develop a more comprehensive and far-reaching agreement.

In order to verify the agreements the two Parties consented to use national technical means of verification "in a manner consistent with generally recognized principles of international law". In the context of the SALT agreements, national technical means of verification include photographic reconnaissance satellites, aircraft-based systems (such as radars and optical systems), and sea- and ground-based systems such as radars and antennae for collecting telemetry.³ The most important characteristic of national technical means of verification is its non-intrusive, unilateral nature. NTM are non-intrusive in that they are not located on the national territory of the Party being monitored. Use and control of NTM are the responsibility of the monitoring State.⁴

The two Parties agreed not to interfere with each other's national technical means of verification and not to use deliberate concealment measures to impede verification. Early in the negotiations the Super Powers recognized that the likely complexity of the resulting agreements would require precise guidelines and continuous dialogue to permit implementation and verification of the agreements. For this purpose, the Standing Consultative Commission was established. It was given a mandate to consider sensitive compliance and verification issues as well as further strategic arms control measures and changes in the strategic situation bearing on the treaties in question.

Verification played a major role in SALT I. In the first place, a SALT agreement was only considered to be practicable because national technical means of verification had been developed to a high state, especially by means of satellites operating in outer space. Verification of limitations, at least on strategic ballistic missile launchers, could be conducted with a high degree of confidence using national technical means. Development of national technical means of verification thus set the stage for

² The SALT I Agreement does not contain any specific figures or numerical limits. The Protocol to the Agreement set upper limits on the number of SLBMs that could be deployed (710 for the United States and 950 for the Soviet Union) and stated that SLBMs beyond those currently operational or under construction (656 for the United States and 740 for the Soviet Union, up to these limits) could become operational as replacements for an equal number of ICBMs of older types deployed before 1964 or of SLBMs on older submarines. No figures were officially exchanged on the number of ICBMs operational or under construction at the time of signing.

³ US Department of State, Bureau of Public Affairs, *Security and Arms Control: The Search for a More Stable Peace*, Washington, DC, US Department of State, June 1983, p. 65. For a discussion of what was considered possible to verify by national technical means, see testimony of Herbert Scoville, Jr., before the US Senate Subcommittee on Arms Control, International Law and Organization of the Committee on Foreign Relations, 1970, pp. 227-231.

⁴ For a discussion of NTMs, see William F. Rowell, *Arms Control Verification: A Guide to Policy Issues for the 1980s*, Cambridge, Mass., Ballinger Publishing Company, 1986, pp. 51-55.

quantitative limits on strategic weapons.⁵ At the same time, the capabilities of national technical means of verification set limits on what was included in the agreement. The freeze was on offensive strategic missile *launchers* because these were considered to be within the limits of the capabilities of national technical means of verification. The agreement focused on launchers of nuclear missiles, rather than missiles themselves, because NTM could detect, identify and count launchers but they could not tell whether a missile silo was loaded with a missile or empty, nor could they reliably count stored missiles.

Gerard Smith, head of the US SALT delegation, writes that methods of verification had clearly been a major concern of the Soviet Union during the opening round of the talks and the fact that the United States no longer insisted on on-site inspections for verification may well have been a *sine quo non* for proceeding with the talks.⁶ Smith points out that although the Arms Control Agency and the Atomic Energy Commission had done some work on techniques for on-site inspection, there was little, if any, preparatory discussion at high level about the specifics of such inspections or about what advantages, if any, they might offer over national technical means of verification.

Qualitative limits on weapon systems were more difficult to negotiate. For example, a precise understanding of what would be allowed under provisions for modernization and replacement in the proposed freeze on offensive strategic missile launchers was a major negotiating aim of the United States. Soviet proposals for modernization and replacement were distinguished by the absence of any reference to the US proposed freeze on launchers for Modern Large Ballistic Missiles (MLBMs). The United States was concerned that the absence of an MLBM freeze could permit increases in the number of MLBM launchers through conversion of smaller ICBM launchers. It was important to the United States that an increase in the numbers of MLBM launchers should not come about through exercising the right to modernize and replace aging launchers contained in the agreement. The United States maintained that a prohibition on increasing the depth and diameter of ICBM launchers was essential for verifying the freeze on MLBM launchers.

In order to aid verification of a freeze on MLBM launchers, the United States proposed that precise definitions be included in the agreement. The first US approaches (April 1970) included a precise definition of MLBMs, contained provisions that ICBM launchers could not be modified in externally observable ways and that retrofit of current launchers with missiles not previously deployed would be limited to missiles whose volume did not exceed 70 cubic meters. The US proposals of August 1970 provided that silo launchers modified in externally observable ways would be counted under the proposed MLBM launcher subceiling. The June 1971 draft treaty proposed by the United States provided for modernization of strategic missiles but stipulated that there should be no increase in the depth or interior diameter of ICBM

⁵ Smith, *Doubletalk*, pp. 117-119.

⁶ Smith, *Doubletalk*, pp. 170-171.

launchers in order to prevent conversion from light to heavy ICBMs. MLBM (heavy missile) launchers would be limited to those completed before 31 December 1971. MLBMs were again defined as missiles having a volume greater than 70 cubic meters.⁷

The Soviet Union was prepared to agree that the proposed freeze on ballistic missile launchers applied to heavy as well as light ICBMs and proposed that, if necessary, the two sides could assume an obligation not to convert from light launchers to heavy launchers in the process of modernization. However, Soviet proposals did not include a definition of heavy missiles. The Soviet Union maintained that national technical means of verification made it possible to distinguish between light and heavy missile launchers with confidence and that no misunderstandings could arise in this regard. The United States pointed out that the Soviet approach was putting a very heavy burden on national technical means of verification, requiring them to both ascertain facts and make judgements. The two Parties finally agreed that in the process of modernization and replacement there would be no "significant increases in the size of silo launchers". Significant increases were understood to mean not exceeding 10 to 15%, although some ambiguity remained as to whether this percentage referred to one or all dimensions of a silo. The lack of precise definition in the agreement led to compliance disputes in later years.

The measures of co-operative verification developed in SALT I were extremely important. The two Parties agreed not to interfere with each other's national technical means of verification and not to deliberately impede verification through concealment. The establishment of the Standing Consultative Commission (SCC) was the most important aspect of SALT I. It provided a forum for discussion of sensitive compliance issues and for clarification of problems of definition. The Standing Consultative Commission was created as a mechanism for clarifying details and dealing with disputes or questions of compliance as they arose over the life of the agreements. The idea of such a body was received favourably by both sides in the first session of the SALT/ABM negotiations.⁸ The SCC does not monitor compliance with the treaties under its jurisdiction. That function remains with the national technical means of verification on both sides. It also has no power to enforce compliance. The SCC is a deliberative body, a safety valve where the two sides can discuss and resolve treaty related questions.

II - Standing Consultative Commission

A Memorandum of Understanding on the SCC was signed on 21 December 1972.⁹

⁷ Smith, *Doubletalk*, pp. 331-332.

⁸ The SCC was created to serve both the SALT I Interim Agreement and the ABM Treaty. Comments and analysis in this paper are confined, as much as possible, to the SALT context.

⁹ Memorandum of Understanding between the Government of the United States of America and the Government of the Union of Soviet Socialist Republics Regarding the Establishment of a Standing Consultative Commission, TIAS 7545, US Department of State, *United States Treaties and Other*

The Memorandum officially established the SCC and set out the basic framework for the organization. Each government is represented by a Commissioner and a Deputy Commissioner. They are assisted by a staff as considered necessary by each side. Meetings are held in Geneva and take place as often as necessary or at least twice yearly. The regulations of the SCC were signed on 30 May 1973.¹⁰ The regulations provide, *inter alia*, that the proceedings are to be private, that advisers and experts can participate in meetings when necessary and that the results of discussions may be entered into the records. As far as possible each side should inform the other in advance of issues for discussion. Article XIII of the ABM Treaty stipulates that the regulations can be changed by the two Parties as necessary.

A number of issues were brought before the SCC during the lifetime of the SALT I agreement. In 1973 US intelligence reports suggested that the Soviet Union might be constructing additional ICBM silos, an activity prohibited under the Interim Agreement. When the United States raised the question in the SCC, the Soviet Union replied that the facilities under construction were launch control centres not silos. Clarifying information provided by the Soviet Union in the SCC and further US intelligence information laid this issue to rest.

Also in 1973 the Soviet Union questioned the use of shelters at US Minuteman ICBM sites. The Soviet Union claimed that the shelters constituted deliberate concealment. The Interim Agreement prohibits "deliberate concealment" which interferes with national technical means of verification (Article V). The United States agreed to modify the shelters. A similar issue was raised in 1977 by the United States. The Soviet Union had placed a large net over an ICBM undergoing conversion at a test range. When the United States raised the issue at the SCC, the Soviet Union denied that the activity was questionable in relation to the concealment provisions but agreed to remove the net. These questions led to the signing in the SCC of a formal Understanding Relating to the Use of Shelters Over ICBM Silo Launchers on 30 May 1977.

A Special Session of the SCC was called by the United States in 1975 to discuss a new Soviet missile, the SS-19. During the SALT I negotiations, the United States had sought but failed to achieve agreement on the definition of a "heavy missile". The United States submitted a unilateral statement on the issue outlining its definition of a heavy missile. The SS-19 was not a violation of the Interim Agreement but went beyond the limits of the US understanding. The United States took the issue to the SCC in an effort to re-clarify the situation. The issue was left unresolved in the SCC since it was being discussed at the SALT II negotiations and was expected to be dealt with there.

Questions were raised by both Parties about procedures for dismantling. In 1976 it became evident that the Soviet Union was not going to be able to dismantle the

International Agreements, Vol. 24, Part 1, 1973, pp. 239-241.

¹⁰ Standing Consultative Commission: Regulations, TIAS 7637, US Department of State, *United States Treaties and Other International Agreements*, Vol. 24, Part 1, 1973, pp. 1124-1125.

number of land-based launchers necessary to compensate for its new SLBM launchers within the required time frame established in the 1974 Protocol. The Soviet Union raised this problem in the SCC. It explained why it was experiencing difficulty and confirmed that the dismantling would be completed by 1 June 1976. In the meantime the Soviet Union agreed not to deploy any new submarines with SLBMs.

The Soviet Union questioned the United States about the dismantling procedures being used for the Atlas and Titan I missiles and the possibility of their reactivation. Although the missiles were not covered by the Interim Agreement, the United States provided information about their dismantlement. Similarly the Soviet Union raised questions about the dismantlement of the US ABM site at Malmstrom (Montana) which the US was taking down in order to remain within the terms of the ABM Treaty. The United States reviewed the dismantlement procedures with the Soviet Union and the issues of concern were resolved.

III - SALT II

The SALT II negotiations were much more complex than SALT I. They produced a treaty on the limitation of strategic offensive arms, a protocol to the treaty and numerous appended agreed statements and common understandings. The complexity of provisions required national technical means to be much more discerning than was required in SALT I, leading many in the United States to question the ability of national technical means to perform their task.

Like the SALT I interim agreement, the SALT II Treaty placed limits on strategic nuclear launch vehicles (i.e., limits were on the launcher, not the missiles themselves). SALT II included heavy bombers and Air-to-Surface Ballistic Missiles (ASBMs) in the restricted categories. The Parties agreed to limit ICBM launchers, SLBM launchers, heavy bombers and ASBMs to an aggregate ceiling of 2,400. This ceiling would be lowered to 2,250 as of 1 January 1981. Within the aggregate ceiling there were sublimits for launchers of strategic nuclear delivery vehicles equipped with MIRV.¹¹ Launchers of ICBMs and SLBMs equipped with MIRVs, ASBMs equipped with MIRVs and heavy bombers equipped with MIRVs were limited to an aggregate total of 1,320. Launchers of ICBMs, SLBMs and ASBMs equipped with MIRVs were not to exceed 1,200, while launchers of ICBMs equipped with MIRVs would be limited to 820.

SALT II also contained qualitative limits on weapon systems. The United States and the Soviet Union agreed not to supply ICBM launcher deployment areas with ICBMs in excess of the number consistent with normal deployment, maintenance, training and replacement requirements; not to provide storage facilities or store ICBMs in excess of these numbers at launch facilities; and not to develop, test or deploy systems for rapid reload of ICBM launchers. They consented not to start construction

¹¹ MIRV is an acronym for Multiple Independently-targetable Re-entry Vehicles, essentially the number of warheads carried by a single missile.

of additional ICBM launchers, not to relocate launchers, and not to convert launchers for light ICBMs to launchers for heavy ICBMs. They also agreed not to flight test or deploy more than one new type of ICBM, not to deploy ICBMs heavier than the heaviest existing ICBM, and not to flight test increased MIRV capabilities greater than those existing at the time of signing. ICBMs could carry no more than 10 MIRVs, SLBMs no more than 14. Treaty provisions prohibited flight tests of cruise missiles with a range greater than 600 km, prohibited deployment of mobile launchers for heavy ICBMs, and prohibited the development of MIRVs for cruise missiles.

These provisions increased the responsibilities of national technical means of verification. During the negotiations the United States and the Soviet Union agreed on a number of important measures to aid verification by national technical means. These included pledges not to interfere with the collection of treaty-related information, either by direct interference with NTM sensors or through the use of concealment or deception to mask relevant information. In addition, the two sides developed definitions, counting rules and special design features called "Functionally-Related Observable Differences" (FRODs) to assist in counting and evaluating weapons by national technical means. The Treaty contained provisions for a periodic exchange of data on weapon systems and pre-notification of flight tests for ballistic missiles. The Parties agreed to continue to use the Standing Consultative Commission, and the Treaty included provisions defining its framework. Many provisions in the Treaty state that the terms of implementation will be worked out in the SCC. These co-operative measures of verification greatly strengthened the SALT II Treaty and required concessions on both sides. The increased complexity of the Treaty necessitates a discussion of the background to the negotiations, an analysis of the capabilities of NTMs, and the political context in which negotiations took place in order to assess the adequacy of the verification measures.

The inclusion of sublimits on MIRVed missiles necessitated the incorporation of various "counting rules" in the Treaty to ease the burden on national technical means of verification. The Soviet Union argued that the provisions in the SALT I Interim Agreement, which prohibited either side from using deliberate concealment measures to impede verification, would be sufficient to verify whether a side was or was not converting single warhead missiles to MIRVed warhead missiles. The United States argued that the vigorous Soviet MIRVing programme placed too heavy a burden on national surveillance systems; therefore, the prohibition against concealment must be supplemented by various counting rules. The United States proposed that once a missile booster type had been tested with MIRVs, all missiles of that type would count as MIRVed missiles.

The SALT II Treaty expanded the functions and purview of the Standing Consultative Committee. Article XVII of the Treaty calls upon the Parties to use the SCC to "promote the objectives and implementation of the provisions" of the Treaty. SALT II covered more types of weapons systems and was much more detailed than the SALT I Interim Agreement, placing more emphasis on national technical means of verification and providing increased scope for problems or discrepancies. Although

most of the initial functions outlined for the SCC in SALT II are identical to those provided for under the ABM Treaty and SALT I Interim Agreement, the SALT II Treaty expanded the role of the SCC in a number of important areas. For example, Article XVII (2e) of the SALT II Treaty charges the SCC with developing agreed dismantlement procedures, as does Article XIII of the ABM Treaty. The SALT II Treaty adds that both sides must also notify each other at least twice a year of changes that have occurred due to dismantlement or removal of weapons systems.

Article XVII (3) of the SALT II Treaty also adds a new function to the SCC. It requires the Parties to maintain an agreed database on the numbers of strategic offensive arms on both sides, as first established in a Memorandum of Understanding attached to the Treaty.¹² To this end, an Agreed Statement required the Parties to inform each other of changes in their own numbers at each formal session of the SCC (as specified in Article XVII (3)) according to specified categories.

The SALT II Treaty was signed in 1979 but never formally ratified. In 1981 the United States made clear its intention not to ratify the Treaty. Prior to 1981 both nations were obligated under international law not to take any action which would "defeat the object and purpose" of the signed but unratified Treaty. After 1981, both the United States and the Soviet Union made public statements pledging to observe the SALT II provisions but conditioned their continued adherence to the actions of the other side. The early 1980s were marked by an atmosphere of deteriorating bilateral relations and a series of public charges of Soviet non-compliance with the SALT II Treaty limits and other arms control obligations.¹³ The United States formally renounced its adherence to the SALT II limits in May 1986.

The United States raised two issues involving Soviet compliance with SALT II obligations. It charged that the Soviet SS-25 missile violated two numerical parameters of SALT II and was therefore a second new missile, prohibited by the Treaty. The United States also charged that the increasing Soviet practice of encryption of test data was interfering with the US ability to verify compliance through national technical means and therefore a violation of the Treaty. Under the SALT II Treaty, encryption of test data and other means of transmitting telemetry are expressly allowed except when they interfere with the monitoring of SALT II's limits on weapons innovation. The Soviet Union offered to open channels that the United States thought necessary for verification if the United States would in turn provide a list of parameters to be verified. The United States thought that such a list might compromise its intelligence-gathering capabilities and the issue was left unresolved.¹⁴

¹² Memorandum of Understanding Between the United States of America and the Union of Soviet Socialist Republics Regarding the Establishment of a Data Base on the Numbers of Strategic Offensive Arms of June 18, 1979.

¹³ A summary of US charges and Soviet counter-charges may be found in *Survival*, Vol. 26, No. 3, May/June 1984, pp. 127-133.

¹⁴ For a fuller treatment of these issues, see James A. Schear, "Arms Control Treaty Compliance: Buildup to a Breakdown?", *International Security*, Vol. 10, No. 2, fall 1985, pp. 141-183.

It is important to note that the United States raised these issues through public charges of non-compliance rather than using the mechanism established for the purpose of resolving such disputes, the SCC. The effectiveness of the SCC as a mechanism for resolving disputes and ambiguities was seriously questioned by the United States during the Reagan Administration. SCC deliberations were postponed in early 1981 while the new Reagan Administration undertook a review of arms control policy. When the US returned to the SCC it was with a markedly different approach from that taken by previous US delegations. In 1982, The President's General Advisory Committee on Arms Control and Disarmament undertook to study the history of Soviet compliance with arms control agreements. This resurrected issues that were said to have been resolved by previous administrations in the SCC. The report concluded that

... the near total reliance on secret diplomacy in seeking to restore Soviet compliance has been largely ineffective. The US record of raising its concerns about Soviet non-compliance exclusively in the Standing Consultative Commission and through various high level diplomatic demarches demonstrates the ineffectiveness of this process.

...
US efforts to obtain Soviet compliance have been most effective when reliable information about compliance has been presented to the American people and to the world.¹⁵

IV - Lessons Learned

Whether the provisions in the SALT agreements provided "adequate" verification is difficult to determine. Since 100% verifiability is seldom possible, arguments over the adequacy of verification tend to centre around the minimum acceptable range of imperfection. Adequate verification has been described as "nothing more than the recognition that few things in life can be determined with absolute certainty, that levels of confidence and margins of error are inevitable, and that the important questions are how high we can make the levels of confidence and how low the margins of error".¹⁶ Adequate verification involves the acceptance of a degree of uncertainty and risk. Monitoring is used as a means of lowering that risk, but monitoring itself is not 100% reliable. The ability to monitor compliance with an arms control or disarmament agreement depends on the existing technological capabilities and on the clarity of the definition of the provisions in the agreement that require monitoring.

Multiplicity and redundancy of monitoring systems help to reduce the possibility that indications of non-compliance may be overlooked; on the other hand, the large amount of data that is collected increases the possibility that a signal may not be

¹⁵ General Advisory Committee on Arms Control and Disarmament, *A Quarter Century of Soviet Compliance Practices Under Arms Control Commitments: 1958-1983*, pp. 14-15.

¹⁶ Les Aspin and Fred M. Kaplan, "Verification in Perspective", in William C. Potter (ed.), *Verification and SALT*, Boulder, Westview Press, 1980, p. 177.

identified as an indication, may be misinterpreted, or may not be recognized in time.¹⁷ Time plays an important role in determining the adequacy of verification. President Nixon's instructions to the SALT I delegation stressed that the United States must be in a position to "identify attempted evasion if it occurs on a large enough scale to pose a significant risk" and to do so "in time to mount a sufficient response".¹⁸ Many definitions of adequate verification stress the element of time. Joseph Kruzel writes that the adequacy of verification depends in part on the ability to carry out appropriate and timely reactions if treaty violations are detected.¹⁹

A focus on timely detection does not address the ambiguities that inevitably arise over the nature of the agreed limitations and the tendency of some within defence establishments to exploit these ambiguities when conceivable advantages could result. Technical problems of monitoring are compounded by poorly worded treaty provisions that fail to describe sufficiently or accurately the subject of the limitation or proscribed activity. Ambiguities in treaty language make it more difficult to ascertain whether monitoring data indicates a violation or merely an activity not expressly proscribed by treaty provisions. Imprecise language has been one of the most telling criticisms levelled at the SALT agreements. The existence of "loopholes" has made it extremely difficult to produce evidence of compliance or non-compliance. In fact, the United States has knowingly approved linguistic ambiguities in the treaty provisions either as the price necessary to reach agreement or to protect its own military programmes. The lack of clarity in treaty provisions has subsequently led to ambiguity in the interpretation of monitoring data.

William Kincade has identified three types of ambiguities contained in the SALT agreements. The first type is referred to as "residual ambiguities", where the United States preferred not to define a system or activity too carefully in order to allow compliance questions to be raised in the Standing Consultative Commission. Too precise a definition would leave insufficient flexibility to deal with problems brought about by evolving technology and might create a loophole that would pose a large security risk with no legal recourse. The second type of ambiguity left open certain US strategic options. For example, certain provisions in the SALT II agreement were left deliberately vague in order to permit the mobile deployment of the new US experimental missile (MX). The third type of ambiguity relates to the limits of monitoring technology. For example, the definition of a "launcher" was left imprecise primarily because existing technology allows identification of only certain types of holes in the ground and launching facilities. The risks of this vagueness were

¹⁷ Stephen M. Meyer, "Verification and Risk in Arms Control", *International Security*, Vol. 8, No. 4, spring 1984, p. 114.

¹⁸ Cited in Michael Krepon, "Decontrolling the Arms Race: The US and the Soviets Fumble the Compliance Issues", *Arms Control Today*, Vol. 14, No. 3, March/April 1984, p. 2.

¹⁹ Joseph J. Kruzel, "Verification and SALT II", W. Potter, *Verification and SALT*, p. 101.

considered insignificant at the time because of the great difficulty of firing large missiles reliably from other than readily identifiable launchers.²⁰

Other difficulties in monitoring arise from treaty provisions that require very fine discrimination capabilities. If a weapon system is totally banned, then detection of one weapon would indicate a violation. However, if limited deployment of a weapon system is permitted, then the monitoring capability must not only detect, but also measure. Detection is almost always easier than measurement and provides less ambiguous results. Limitations on practices require even finer discrimination capabilities. For example, the SALT II Treaty allowed each side to flight test and deploy only one new type of ICBM - described as one that differed from existing types in terms of number of stages, type of propellant, length, largest diameter, launch-weight or throw-weight.²¹ The last four characteristics were not to vary by more than 5 percent. At the same time, each side was permitted to modernize its existing ICBMs within the 5 percent limit. Determining whether a flight test is within these limits and is therefore a modernization of an existing ICBM or whether it exceeds these limits and is therefore a flight test of a new ICBM requires highly discriminating monitoring capabilities. Requirements for such fine distinctions often produce ambiguous results.

It is possible that the SALT agreements represent the limit, or something very close to the limit, of what may confidently be verified by national technical means. For arms control to proceed beyond negotiated ceilings, it is necessary to employ verification measures which supplement and improve the capabilities of national technical means. Such measures have been referred to as "co-operative verification". They require the co-operation of all Parties to an agreement and the recognition that the benefits gained by concluding an agreement outweigh both the risks (of possibly compromising military secrets) and the political costs (of sacrificing a measure of political sovereignty and of co-operation with the adversary).

In the strategic arms limitation talks, the United States and the Soviet Union have agreed on a number of modest steps to reinforce and protect their NTM capabilities. In SALT they consented not to interfere with each other's monitoring capabilities and not to use deliberate concealment measures which would impede verification. They have agreed to provide counting rules in order to limit MIRVed warheads, and to design and deploy systems that can be readily discerned and counted based on "functionally related observable differences". They have reached agreement on the pre-notification of certain test activities and on the periodic exchange of information in order to check data obtained by national technical means. Most importantly, they have agreed to the establishment of the Standing Consultative Commission to consider sensitive compliance and verification issues, as well as further strategic arms control

²⁰ William H. Kincaid, "Challenges to Verification: Old and New", *Arms Control*, Vol. 3, No. 3, December 1982, pp. 17-22.

²¹ Stephen M. Meyer, "Verification and Risk in Arms Control", *International Security*, Vol. 8, No. 4, spring 1984, p. 114.

measures and "changes in the strategic situation" bearing on the treaties in question.²² These measures provide both precedent and basis for concluding agreements on future co-operative measures. Future arms control agreements, especially for arms reduction, will require more intrusive co-operative measures, including forms of on-site inspection. The need for increased co-operative measures is emphasized by the increasing complexity of the verification problems presented (as strategic arms control criteria move from ceilings to reductions) and by the problems caused by the development of new weapons technologies.

Of equal importance to verification are the provisions which deal with issues after monitoring has detected possible violations. In analysing verification provisions for strategic arms reduction, as in all arms control agreements, it is important to look not only at the ability to monitor the provisions of the agreement, but also at the mechanisms established for discussion and resolution of possible violations detected through monitoring, and the options available to the Parties should charges of violation be substantiated.

Opinion varies as to the value of the SCC experience. Some analysts feel that it has been an effective forum for resolving issues. Others, primarily associated with the Reagan Administration, feel that it failed to fulfil its functions and allowed the Soviet Union to continue violating arms control agreements. A number of officials in the Reagan Administration dismissed the SCC as having failed in the past, with little hope for the future. The SCC was described as "... a diplomatic carpet under which Soviet violations have been continuously swept, an Orwellian memory hole into which our concerns have been dumped like yesterday's trash".²³ However, a report of the US House of Representatives Select Committee on Intelligence found that, contrary to the claims of critics, "... the SCC has in the past resolved differences in treaty interpretation and clarified ambiguous situations when they have arisen".²⁴ A similar positive assessment was provided by a study on arms control compliance undertaken at Stanford University:

Without a body such as the SCC functioning as an integral part of the arms control process, treaties become out-of-date and irrelevant. Until the United States and Soviet Union return the SCC to its role of facilitating US-Soviet agreement on procedures for implementing agreements and reaching joint treaty interpretations, and, indeed, until they expand and improve the SCC's role, no existing or future arms control agreement will be capable of operating effectively over time.²⁵

²² James A. Schear, "Verifying Arms Agreements: Premises, Practices and Future Problems", *Arms Control*, Vol. 3, No. 3, December 1982, pp. 82-84.

²³ Richard Perle, "Responding to Soviet Violations Policy (RSVP) Study", Memorandum to the President, December 1985. Cited in Antonia Handler Chayes and Abram Chayes, "From Law Enforcement to Dispute Settlement: A New Approach to Arms Control Verification and Compliance", *International Security*, Vol. 14, No. 4, spring 1990, p. 160.

²⁴ US Congress, Permanent Select Committee on Intelligence, House of Representatives, *Intelligence Support to Arms Control*, Report 19, November 1987, Report 100-450, p. 13.

²⁵ Gloria Duffy (ed.), *Compliance and the Future of Arms Control*, Stanford University, the TC Center for International Security and Arms Control, 1988, p. 184.

Since the only power of the SCC is to negotiate, it can only resolve controversies when the Parties are willing to negotiate in good faith and seek mutually satisfactory solutions. The SCC seems to have worked effectively until the early 1980s when it fell victim to US uncertainty about the utility of the arms control process. The Nixon, Ford and Carter administrations were supportive of the SCC and did not denigrate its effectiveness. The negative assessments of the SCC which began in the 1980s were part of the overall attitude towards the Soviet Union and arms control that marked the first six years of the Reagan administration. Even during that time the SCC provided a mechanism for discussion between the two sides. The United States and the Soviet Union kept the SCC channel open during periods of harsh public exchanges. Useful discussion on sensitive military subjects continued even after the Soviet Union decided not to resume negotiations on strategic and intermediate range nuclear forces in 1983. As a first attempt at working with a US-Soviet Union consultative mechanism, the SCC has provided some useful lessons as to the types of instruments that work effectively and those that need strengthening. This experience is of continuing importance in developing a consultative mechanism for future arms control and disarmament agreements.

Michael Krepon and Sidney Graybeal (a former SCC Commissioner) have provided a number of suggestions for improving the SCC.²⁶ They suggest that it be given clearer bureaucratic connections at home and that compliance concerns be raised in the SCC first, and only taken to higher levels when they are still not resolved satisfactorily. Issues raised should be based on a clear set of factual circumstances. It would also be useful to distinguish between issues according to their degree of importance. This would enable working groups to deal with technical questions. If the issues were not resolved at this level, they could then be dealt with by the Commissioners. More information should be made available to the public about the activity and results of the SCC, while maintaining the secrecy of the deliberations themselves. This could be done by releasing factual reports to the public, perhaps on an annual basis.

A review of the verification experience of the bilateral SALT agreements provides a number of important lessons for verification of future arms control and disarmament agreements. First, monitoring, even by the sophisticated national technical means of the United States and the Soviet Union, must be supported by precise treaty provisions which specify what is to be monitored. Second, even sophisticated national technical means of verification need to be supplemented by co-operative measures of verification, including provisions for non-interference, non-concealment and, most importantly, by information exchanges between the Parties. Finally, consultative mechanisms for the discussion of uncertainties and the resolution of misunderstandings are indispensable for the functioning of any verification regime.

²⁶ Sidney Graybeal and Michael Krepon, "Making Better Use of the Standing Consultative Commission", *International Security*, fall 1985, pp. 183-199.

Annexes

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Table 1: Procedures related to SALT I (1972) and SALT II (1979)
Main Treaty Provisions and Monitoring and Verification Methods

	Factfinding							Assessment procedures					
	0	1	2	3	4	5	6	7	8	9	10	11	12
Establishment of data base													
Limitation of use													
Limitation of deployment													
Limitation of testing													
Limitation of possession													
Limitation of production													
Limitation of transfer													
Prohibition of use													
Prohibition of deployment													
Prohibition of testing													
Prohibition of possession													
Prohibition of production													
Prohibition of transfer													
Destruction													

0 = No method; 1 = National Technical Means; 2 = Exchange of data; 3 = Consultation; 4 = Control Posts/Observation; 5 = On-site inspection on a State territory; 6 = On-site inspection on a non-State territory; 7 = IAEA Safeguards; 8 = Review Conference; 9 = Submission of report; 10 = Consultation; 11 = Referral to an international organization; 12 = Referral to the International Court of Justice.

For further explanation see also pages 265 and 32-34.

Explanatory note on Table 1

The Salt I Treaty limits deployment and possession of SLBM launchers and submarines (Article III) and of fixed-land-based ICBMs (Article I). The production of the latter is limited as of 1972 to modernization or replacement (Article IV). The SALT II Agreement contains similar prohibitive clauses.

Factfinding methods

For the verification of the SALT Agreements, NTMs will be used (Article V of SALT I and Article XV of SALT II) as well as exchange of data and consultation through the Standing Consultative Commission, created by Article XIII of the ABM Treaty (see Article XVII of SALT II and the ABM Treaty).

Assessment procedures

Assessment of facts may take place in the Standing Consultative Commission.

The Relevant Treaty Articles

INTERIM AGREEMENT BETWEEN THE USA AND THE USSR ON CERTAIN MEASURES WITH RESPECT TO THE LIMITATION OF STRATEGIC OFFENSIVE ARMS (SALT I) (26 MAY 1972, MOSCOW)

ARTICLE I

The Parties undertake not to start construction of additional fixed land-based inter-continental ballistic missile (ICBM) launchers after July 1, 1972.

ARTICLE II

The Parties undertake not to convert land-based launchers for light ICBMs, or for ICBMs of older types deployed prior to 1964, into land-based launchers for heavy ICBMs of types deployed after that time.

ARTICLE III

The Parties undertake to limit submarine-launched ballistic missile (SLBM) launchers and modern ballistic missile submarines to the number operational and under construction on the date of signature of this Interim Agreement, and in addition to launchers and submarines constructed under procedures established by the Parties as replacements for an equal number of ICBM launchers of older types deployed prior to 1964 or for launchers on older submarines.

ARTICLE IV

Subject to the provisions of this Interim Agreement, modernization and replacement of strategic offensive ballistic missiles and launchers covered by this Interim Agreement may be undertaken.

ARTICLE V

1. For the purpose of providing assurance of compliance with the provisions of this Interim Agreement, each Party shall use national technical means of verification at its disposal in a manner consistent with generally recognized principles of international law.

2. Each Party undertakes not to interfere with the national technical means of verification of the

other Party operating in accordance with paragraph 1 of this Article.

3. Each Party undertakes not to use deliberate concealment measures which impede verification by national technical means of compliance with the provisions of this Interim Agreement. This obligation shall not require changes in current construction, assembly, conversion, or overhaul practices.

ARTICLE VI

To promote the objectives and implementation of the provisions of this Interim Agreement, the Parties shall use the Standing Consultative Commission established under Article XIII of the Treaty on the Limitation of Anti-Ballistic Missile Systems in accordance with the provisions of that Article.

ARTICLE VIII

(...)

3. Each Party shall, in exercising its national sovereignty, have the right to withdraw from this Interim Agreement if it decides that extraordinary events related to the subject matter of this Interim Agreement have jeopardized its supreme interests. It shall give notice of its decision to the other Party six months prior to withdrawal from this Interim Agreement. Such notice shall include a statement of the extraordinary events the notifying Party regards as having jeopardized its supreme interests.

TREATY BETWEEN THE USA AND USSR ON THE LIMITATION OF STRATEGIC OFFENSIVE ARMS (SALT II) (SIGNED ON 18 JUNE 1979, AT VIENNA)

ARTICLE I

Each Party undertakes, in accordance with the provisions of this Treaty, to limit strategic offensive arms quantitatively and qualitatively, to exercise restraint in the development of new types of strategic offensive arms, and to adopt other measures provided for in this Treaty.

ARTICLE III

1. Upon entry into force of this Treaty, each Party undertakes to limit ICBM launchers, SLBM launch-

ers, heavy bombers, and ASBMs to an aggregate number not to exceed 2,400.

2. Each Party undertakes to limit, from 1 January 1981, strategic offensive arms referred to in paragraph 1 of this Article to an aggregate number not to exceed 2,250, and to initiate reductions of those arms which as of that date would be in excess of this aggregate number.

3. Within the aggregate numbers provided for in paragraph 1 and 2 of this Article and subject to the provisions of this Treaty, each Party has the right to determine the composition of these aggregates.

4. For each bomber of a type equipped for ASBMs, the aggregate numbers provided for in paragraphs 1 and 2 of this Article shall include the maximum number of such missiles for which a bomber of that type is equipped for one operational mission.

5. A heavy bomber equipped only for ASBMs shall not itself be included in the aggregate numbers provided for in paragraphs 1 and 2 of this Article.

6. Reductions of the numbers of strategic offensive arms required to comply with the provisions of paragraphs 1 and 2 of this Article shall be carried out as provided for in Article XI.

ARTICLE IV

1. Each Party undertakes not to start construction of additional fixed ICBM launchers.

2. Each Party undertakes not to relocate fixed ICBM launchers.

3. Each Party undertakes not to convert launchers of light ICBMs, or of ICBMs of older types deployed prior to 1964, into launchers of heavy ICBMs of types deployed after that time.

4. Each Party undertakes in the process of modernization and replacement of ICBM silo launchers not to increase the original internal volume of an ICBM silo launcher by more than thirty-two per cent. Within this limit each Party has the right to determine whether such an increase will be made through an increase in the original diameter or in the original depth of an ICBM silo launcher, or in both of these dimensions.

5. Each Party undertakes:

(a) not to supply ICBM launcher deployment areas with intercontinental ballistic missiles in excess of a number consistent with normal deployment, maintenance, training, and replacement requirements;

(b) not to provide storage facilities for or to store ICBMs in excess of normal deployment requirements at launch sites of ICBM launchers;

(c) not to develop, test, or deploy systems for rapid reload of ICBM launchers.

ARTICLE VI

1. The limitations provided for in this Treaty shall apply to those arms which are:

- (a) operational;
- (b) in the final stage of construction;
- (c) in reserve, in storage, or mothballed;
- (d) undergoing overhaul, repair, modernization, or conversion.

(...)

7. In accordance with the provisions of Articles XVII, the Parties will agree in the Standing Consultative Commission upon procedures to implement the provisions of this Article.

ARTICLE XI

1. Strategic offensive arms which would be in excess of the aggregate numbers provided for in this Treaty as well as strategic offensive arms prohibited by this Treaty shall be dismantled or destroyed under procedures to be agreed upon in the Standing Consultative Commission.

ARTICLE XV

1. For the purpose of providing assurance of compliance with the provisions of this Treaty, each Party shall use national technical means of verification at its disposal in a manner consistent with generally recognized principles of international law.

2. Each Party undertakes not to interfere with the national technical means of verification of the other Party operating in accordance with paragraph 1 of this Article.

3. Each Party undertakes not to use deliberate concealment measures which impede verification by national technical means of compliance with the provisions of this Treaty. This obligation shall not require changes in current construction, assembly, conversion, or overhaul practices.

ARTICLE XVI

1. Each Party undertakes, before conducting

each planned ICBM launch, to notify the other party well in advance on a case-by-case basis that such a launch will occur, except for single ICBM launches from test ranges or for ICBM launcher deployment areas, which are not planned to extend beyond its national territory.

2. The Parties shall agree in the Standing Consultative Commission upon procedures to implement the provisions of this Article.

ARTICLE XVII

1. To promote the objectives and implementation of the provisions of this Treaty, the Parties shall use the Standing Consultative Commission established by the Memorandum of Understanding Between the Government of the United States of America and the Government of the Union of Soviet Socialist Republics Regarding the Establishment of a Standing Consultative Commission of 21 December 1972.

2. Within the framework of the Standing Consultative Commission, with respect to this Treaty, the Parties will:

(a) consider questions concerning compliance with the obligations assumed and related situations which may be considered ambiguous;

(b) provide on a voluntary basis such information as either Party considers necessary to assure confidence in compliance with the obligation assumed;

(c) consider questions involving unintended interference with national technical means of verification, and questions involving unintended

impeding of verification by national technical means of compliance with the provisions of this Treaty;

(d) consider possible changes in the strategic situation which have a bearing on the provisions of this Treaty;

(e) agree upon procedures for replacement, conversion, and dismantling or destruction, of strategic offensive arms in cases provided for in the provisions of this Treaty and upon procedures for removal of such arms from the aggregate numbers when they otherwise cease to be subject to the limitations provided for in this Treaty, and at regular sessions of the Standing Consultative Commission, notify each other in accordance with the aforementioned procedures, at least twice annually, of actions completed and those in process;

(f) consider, as appropriate, possible proposals for further increasing the viability of this Treaty, including proposals for amendments in accordance with the provisions of this Treaty;

(g) consider, as appropriate, proposals for arms.

3. In the Standing Consultative Commission the Parties shall maintain by category the agreed data base on the numbers of strategic offensive arms established by the Memorandum of Understanding Between the United States of America and the Union of Soviet Socialist Republics Regarding the Establishment of a Data Base on the Numbers of Strategic Offensive Arms of 18 June 1979.

Chapter 11

The Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (ENMOD Convention) (1977)

Anguel Anastassov

I - Introduction

Safeguarding a vital and harmonious environment is one of the major global issues of today. Due to the increasing impact of the latest achievements in science and technology, which affect the environment both in times of peace and war, this issue is of ever greater importance. This chapter attempts to analyse some aspects of the international legal prohibition on the means of waging an ecological war. Certain provisions of the above-mentioned Convention are subject to critical analysis. Modern international law contains a number of norms which restrict the use of certain material means of waging military action. Inflicting damage on the environment as a means of provoking a war is an ancient device. Recently, however, the international community has attempted to outlaw aggression against the environment as a means of warfare. The prohibition on environmental "interference" for military purposes occupies a central place in that aspect of international law which is related to ecology.

In the aftermath of the United Nations Conference on the Human Environment (Stockholm, 1972), the international community has devoted more and more attention to ecological issues, particularly when environmental destruction is used for military or other hostile purposes. Scientific and technological advances have demonstrated that the means exist to manipulate the environment not only for useful purposes (causing rain, preventing hail, diminishing storms, etc.) but also for hostile purposes harmful to human welfare. In 1972 the US Senate adopted a resolution calling for an international agreement "prohibiting the use of any environmental or geophysical modification activity as a weapon of war". In response to this initiative, the US Defense Department undertook a detailed review of the military aspects of weather and other environmental techniques, concluding that the use of such techniques would inflict irreparable damage on the global environment.

Prohibiting ecological aggression is one of the foremost principles of ecological security.¹ In its draft Articles on the responsibilities of States (Article 19), the UN International Law Commission considers the large-scale pollution of the biosphere to be an international crime. The Commission - one of the main bodies within the UN

¹ A.S. Timoshenko, "Global Ecological Security: Legal Aspects", *Soviet State and Law*, No. 1, 1989, p. 85.

system - has for many years been engaged in exploring the responsibilities of States in transboundary pollution.² The international community has equated such acts with those jeopardizing the maintenance of international peace and security.

II - The Role of the United Nations and the Committee on Disarmament

The United Nations Organization first became actively engaged in the issue of prohibiting interference with the environment for military purposes through a letter of A. Gromyko, dated 7 August 1974, whereby he proposed that the 29th regular session of the UN General Assembly include on its agenda an item entitled "Prohibition of the Use of the Environment and Climate for Military and Other Purposes, Incompatible with the Interests of Guaranteeing the International Security, the Welfare and the Health of Peoples". The draft circulated by the USSR contained a number of elements which stimulated lively debate among delegations. During the discussions in the Committee on Disarmament, some States (like Sweden, the UK and Canada) took the view that the term "military use" should be abandoned because not every military use is necessarily a hostile one. The term in question should be interpreted within the context of Article 1 implying that military use is the capacity for destruction, for inflicting damage or causing harm to another State Party. This is why the international legal order encompasses certain types of damage inflicted on the environment both through military or other hostile means. In the course of negotiations the scope of the prohibition turned out to be a divisive issue among participants. The co-sponsors of the main draft therefore proposed the following interpretation of the consequences stemming from hostile "environmental modification":

- "widespread" - encompassing an area in the region of several hundred square kilometers;
- "long-lasting" - lasting for a period of months or approximately a season;
- "severe" - involving serious or significant disruption or harm to human life, natural and economic resources or other assets.³

In order for the ban to enter into force these three elements need not all be present, unlike the Additional Protocol to the 1949 Geneva Convention for the Protection of War Victim. The scope of prohibition of the Additional Protocol is wider. It bans any means or methods of waging war aimed at causing, or expected to cause ecological harm in the future. The Convention does not include all weapons, but rather the use of environmental modification techniques as a weapon. Moreover, Additional Protocol

² Stephen C. Caffrey, "The Work of the International Law Commission Relations to Transfrontier Environmental Harm", *New York University Journal of International Law and Politics*, Vol. 20, spring 1988, p. 715.

³ CCD/250, p. 7.

I regulates relations among belligerents, whereas the Convention relates to States Parties.⁴

During discussions on this issue in the Conference on Disarmament, it was rightly pointed out that the notions "widespread, long-lasting or severe" furnish loopholes to condone "legal" pollution and destruction of flora and fauna. This could be prevented, it was argued, if all modification techniques were outlawed. Referring to the fact that verification of continuously developing modification techniques for military purposes has already become quite difficult, the USSR and US did not include such a provision in the Convention. Both States indicated that the majority of modern scientific and technological achievements could be used in peaceful and military fields alike.⁵ Jozef Goldblat, has pointed out a number of reasons why the above-mentioned argument has not been reflected in the Convention. Above all, he has pointed out that it is difficult to accept that all modification techniques could have both a military and a peaceful application.⁶

III - Scope of Prohibition

According to Article 1, States Parties to the 1977 Convention have the obligation not to engage in military or any other hostile use of environmental modification techniques having widespread, long-lasting or severe effects as the means of destruction, damage or injury to any other State Party. Also, each State Party undertakes not to assist, encourage or induce any State, group of States or international organizations in such activities. Among the environmental modification techniques referred to in the Convention is the deliberate manipulation of the natural processes - the dynamics, composition or structure - of the Earth (including its biota, lithosphere, hydrosphere and atmosphere) and of outer space. Environmental modification techniques may not be used either in offensive or defensive actions against the military or the civil population, or against natural or man-made targets. In the annex to Convention Article 2, concrete examples are listed of hostile manipulations of the environment: earthquakes, tsunamis, disruption of the ecological balance in specific regions, changes in climatic elements, changes in ocean currents, changes in the state of the ozone layer and the ionosphere. It is explicitly emphasized in the annex that reference to these modification techniques does not constitute an exhaustive list; therefore future scientific and technological advances which may be resorted to enter the scope of Article 1 and will be considered unlawful.

It is rightly assumed in scholarly publications that some modification techniques have no military application. For instance, in making a climatic modification where inflicted harm could become long-lasting and irreparable, the attacking State would

⁴ Bernard K. Schafer, "The Relationship between the International Law of Armed Conflict and Environmental Protection: The Need to Reevaluate what Types of Conflict are Permissible during Hostilities", *California International Law Journal*, Vol. 19, No. 2, 1988-1989, p. 312.

⁵ CCD/684, 1975, p. 11.

⁶ Jozef Goldblat, "The Prohibition of Environmental Warfare", *Ambio*, Vol. 4, No. 5-6, p. 188.

inevitably suffer too.⁷ The Convention has not succeeded in resolving in a satisfactory manner the issues pertaining to the use of modification techniques for peaceful purposes. Article 3 of the Convention states that such utilization should not be hampered. On the other hand, the annex to the same Article points out that the Convention does not explain how certain modification techniques relate to generally recognized principles of international law. Modifying the environment for peaceful purposes is closely connected with the issue of liability of States for damage caused outside their territory. This issue has not been dealt with thoroughly in international public law.

IV - Verification

The Conference on Disarmament witnessed many lively discussions on this matter. Delegations from Egypt, the Netherlands, Sweden, Germany and Japan all drew attention to the procedures for co-operation and for seizing the UN Security Council. The Security Council is entitled to conduct independent investigations to establish whether a given State has been harmed or is likely to be harmed as a result of violation of the Convention. This procedure can however be blocked through the use of the veto by any of its permanent Members.⁸

The delegation of Sweden expressed concern about the verification and complaints procedures. It stressed that all States Parties would have to be treated on a basis equal to that of the permanent Members of the Security Council. This delegation underlined the importance of distinguishing between technical factfinding and a political complaints procedure. The delegation of the Netherlands (CCD/PV.692) also objected to the provision that the Security Council was the only organ which could consider information presented by a complaining Party. This delegation was of the opinion that the proposed complaints procedure was unsatisfactory and a poor precedent for future treaties. An intermediate body was needed which could investigate the matter on an expert basis before the Security Council was involved. The Netherlands favoured the creation of a disarmament agency for that purpose, with the required factfinding powers preferably entrusted to the Secretary-General of the United Nations, assisted by experts. The delegation of FRG also suggested the establishment, outside the United Nations system, of a separate body for verification (CCD/PV.697).

It is not difficult to understand why the permanent Members of the Security Council expressed satisfaction with the verification provisions being connected with the UN body. Although States Parties have the right and obligation to consult and co-operate before resorting to the Security Council, any reliance on this body in the complaints procedure is clearly quite inappropriate. According to Article 4 of the

⁷ *Ibid.*, p. 187.

⁸ The Security Council takes a decision by a positive vote of 9 of its 15 members, including all five permanent members.

Convention, States Parties undertake measures for the prohibition and prevention of every activity in violation of the Convention. They can carry out consultations both on a bilateral basis and through relevant international procedures. In this regard the good offices of the World Meteorological Organization could be used, as well as those of UNEP. Of paramount importance to maintaining the ecological balance is the timely identification and solution of problems that may bring about any disruption of eco-systems. The concrete monitoring mechanisms have a number of particularities which are not the subject of this paper.⁹

For the purposes of the Convention, the process of verification should encompass the following areas:

1. non-use of outlawed techniques;
2. in case of use of such techniques, whether effects are "widespread, long-lasting or severe";
3. the monitoring body should also assess whether a military or hostile modification has taken place.

Given the fact that the threat of use of modification techniques is not explicitly mentioned in the Convention, this should not be considered as a violation. In the course of the Convention's elaboration, the Consultative Committee of Experts received strong encouragement. This body should endeavour to arrive at the appropriate facts and provide expert views concerning the origin and substance of environmental phenomena entering the scope of prohibition. Definite objections exist as to broadening the legal scope of this body, especially with respect to conducting on-site inspection, interpretation of controversial provisions, etc. Such actions could well exceed the technical character of that body. The functions of the Consultative Committee of Experts (where each State Party could appoint its own expert) are established in the annex, which is an integral part of the Convention. The Committee of Experts decides procedural questions, where possible by consensus, but otherwise by a majority. No voting is provided on matters of substance. The Consultative Committee of Experts is not entitled to assess whether a violation of the Convention has taken place and by whom. But it is required to circulate the facts and the opinions of the experts among all States Parties. Each State Party has the right to lodge a complaint with the UN Security Council both directly and through an appropriate international procedure. Ultimately it is the Security Council which is entitled to take the final political decision whether a given State has been harmed or is likely to be so. Such a system is far from being the most rational one, since the Members of the Security Council become artificially placed in a favourable position. One can hardly

⁹ R.E. Munn, "The Design of Integrated Monitoring Systems to Provide early Indications of Environment/Ecological Changes", *Environmental Monitoring and Assessment*, Vol. 11, No. 3, 1989, p. 203.

expect a State Member of the Security Council to vote for a decision condemning its own behaviour under the provisions of the 1977 Convention.

On 10 December 1976, the United Nations General Assembly endorsed the ENMOD Convention by adopting resolution 31/72 by a positive vote of 96 States (negative: 8, abstaining: 30). By early 1989, the Convention was signed by over 60 States, with 47 among them having also ratified it. At the First Review Conference of the Convention, held in 1984, it was pointed out that although a limited disarmament measure it constituted an important tool for the step-by-step elimination of the arms race. The final declaration adopted by the Review Conference reaffirmed the principles and objectives of the 1977 Convention as well as the necessity of continuous monitoring of the observance of its provisions. It recommended that particular attention should be devoted to the possible development of relevant technical means for environmental modification. The First Review Conference stated that throughout the implementation of the 1977 Convention, no complaints had been registered. The forum reaffirmed the validity of the consultations and co-operation among States Parties to achieve the Convention's objectives.

V - Prospects

An important development in the international community's commitment to curb the arms race was the consideration at the 35th regular session (1980) of the UN General Assembly of an item entitled: "Historical responsibility of States for the preservation of nature for present and future generations". The adopted resolution called on the UN Secretary-General to prepare a report on the harmful influence of the arms race on the environment, with the help of UNEP.

The legal prohibition against modifying the natural environment can also be found in the 1981 Convention of Prohibitions or Restrictions on the Use of Certain Conventional Weapons which may be Deemed to be Excessively Injurious or to have Indiscriminate Effects. The scope of prohibition of this document covers any attack on forests or other vegetation with the use of incendiary weapons. Exceptions are allowed only when forests are used to conceal persons in actual battle situations.

Issues of ecological safety will occupy an ever more central place among the global problems facing humanity in the 21st century. It will be particularly urgent to close the gap between two major global problems: protecting the environment and curbing the arms race. A propitious occasion in this regard will be the holding of the World Conference on the Protection of the Environment in 1992.

Annexes

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Table 1: Procedures related to the ENMOD Convention of 1977
Main Treaty Provisions and Monitoring and Verification Methods

	Factfinding							Assessment procedures					
	0	1	2	3	4	5	6	7	8	9	10	11	12
Establishment of data base													
Limitation of use													
Limitation of deployment													
Limitation of testing													
Limitation of possession													
Limitation of production													
Limitation of transfer													
<i>Prohibition of use</i>													
Prohibition of deployment													
Prohibition of testing													
Prohibition of possession													
Prohibition of production													
Prohibition of transfer													
Destruction													

0 = No method; 1 = National Technical Means; 2 = Exchange of data; 3 = Consultation; 4 = Control Posts/Observation; 5 = On-site inspection on a State territory; 6 = On-site inspection on a non-State territory; 7 = IAEA Safeguards; 8 = Review Conference; 9 = Submission of report; 10 = Consultation; 11 = Referral to an international organization; 12 = Referral to the International Court of Justice.

For further explanation see also pages 277 and 32-34.

Explanatory note on Table 1

The Treaty prohibits and seeks to prevent the use of environmental modification techniques for military or hostile purposes (Article I).

Factfinding methods

The verification methods resemble those of the BW Convention. Apart from consultation and co-operation (Article V, paragraph 1), the possibility of convening a Consultative Committee of Experts (paragraph 2) and the possibility of lodging a complaint at the UN Security Council (paragraph 3), no specific means for establishing the facts are identified at the disposal of States Parties.

Any investigation carried out by the Security Council could possibly include on-site inspections (paragraph 4).

Assessment procedures

The assessment of facts lies both with the Consultative Committee of Experts and the UN Security Council.

Article VIII provides for a Review Conference.

The Relevant Treaty Articles

CONVENTION ON THE PROHIBITION OF MILITARY OR ANY OTHER HOSTILE USE OF ENVIRONMENTAL MODIFICATION TECHNIQUES (18 MAY 1977, GENEVA)

ARTICLE I

1. Each State Party to this Convention undertakes not to engage in military or any other hostile use of environmental modification techniques having widespread, long-lasting or severe effects as the means of destruction, damage or injury to any other State Party.

(...)

(...)

ARTICLE V

(1) The States Parties to this Convention undertake to consult one another and to co-operate in solving any problems which may arise in relation to the objectives of, or in the application of the provisions of, the Convention. Consultation and co-operation pursuant to this Article may also be undertaken through appropriate international procedures within the framework of the United Nations and in accordance with its Charter. These international procedures may include the services of appropriate international organizations, as well as of a Consultative Committee of Experts as provided for in paragraph 2 of this Article.

(2) For the purposes set forth in paragraph 1 of this Article, the Depositary shall, within one month of the receipt of a request from any State Party to this Convention, convene a Consultative Committee of Experts. Any State Party may appoint an expert to the Committee whose functions and rules of procedure are set out in the annex, which constitutes an integral part of this Convention. The Committee shall transmit to the Depositary a summary of its findings of fact, incorporating all views and information presented to the Committee during its proceedings. The Depositary shall distribute the summary to all States Parties.

(3) Any State Party to this Convention which has reason to believe that any other State Party is acting in breach of obligations deriving from the

provisions of the Convention may lodge a complaint with the Security Council of the United Nations. Such a complaint should include all relevant information as well as all possible evidence supporting its validity.

(4) Each State Party to this Convention undertakes to co-operate in carrying out any investigation which the Security Council may initiate, in accordance with the provisions of the Charter of the United Nations, on the basis of the complaint received by the Council. The Security Council shall inform the States parties of the results of the investigation.

(5) Each State Party to this Convention undertakes to provide or support assistance, in accordance with the provisions of the Charter of the United Nations, to any State Party which so requests, if the Security Council decides that such Party has been harmed or is likely to be harmed as a result of violation of the Convention.

(...)

ARTICLE VII

This Convention shall be of unlimited duration.

ARTICLE VIII

(1) Five years after the entry into force of this Convention, a conference of the States Parties to the Convention shall be convened by the Depositary at Geneva, Switzerland. The conference shall review the operation of the Convention with a view to ensuring that its purposes and provisions are being realized, and shall in particular examine the effectiveness of the provisions of paragraph 1 of Article 1 in eliminating the dangers of military or any other hostile use of environmental modification techniques.

(2) At intervals of not less than five years thereafter, a majority of the States Parties to this Convention may obtain, by submitting a proposal to this effect to the Depositary, the convening of a conference with the same objectives.

(3) If no conference has been convened pursuant to paragraph 2 of this Article within ten years following the conclusion of a previous conference, the Depositary shall solicit the views of all States Parties to this Convention, concerning the convening of such a conference. If one third or ten of the States Parties, whichever number is less, respond

affirmatively, the Depositary shall take immediate steps to convene the conference.

(...)

ANNEX TO THE CONVENTION

CONSULTATIVE COMMITTEE OF EXPERTS

1. The Consultative Committee of Experts shall undertake to make appropriate findings of fact and provide expert views relevant to any problem raised pursuant to paragraph 1 of Article V of this Convention by the State Party requesting the convening of the Committee.

2. The work of the Consultative Committee of Experts shall be organized in such a way as to

permit it to perform the functions set forth in paragraph 1 of this annex. The Committee shall decide procedural questions relative to the organization of its work, where possible by consensus, but otherwise by a majority of those present and voting. There shall be no voting on matters of substance.

3. The Depositary or his representative shall serve as the Chairman of the Committee.

4. Each expert may be assisted at meetings by one or more advisers.

5. Each expert shall have the right, through the Chairman, to request from States, and from international organizations, such information and assistance as the expert considers desirable for the accomplishment of the Committee's work.

List of Parties

**Convention on the Prohibition of Military or Any Other
Hostile Use of Environmental Modification Techniques
(as of 31 July 1990)**

Afghanistan	1985	Korea, Republic of	1986
Antigua and Barbuda	1988	Kuwait	1980
Argentina	1987	Lao People's Democratic Republic	1978
Australia	1984	Lebanon	S
Austria	1990	Liberia	S
Bangladesh	1979	Luxembourg	S
Belgium	1982	Malawi	1978
Benin	1986	Mongolia	1978
Bolivia	S	Morocco	S
Brazil	1984	Netherlands	1983
Bulgaria	1978	New Zealand	1984
Byelorussian Soviet Socialist Republic	1978	Nicaragua	S
Canada	1981	Norway	1979
Cape Verde	1979	Pakistan	1986
Cuba	1978	Papua New Guinea	1980
Cyprus	1978	Poland	1978
Czech and Slovak Federal Republic	1978	Portugal	S
Denmark	1978	Romania	1983
Egypt	1982	Sao Tome and Principe	1979
Ethiopia	S	Sierra Leone	S
Finland	1978	Solomon Islands	1981
German Democratic Republic ¹	1978	Spain	1978
Germany, Federal Republic of ¹	1983	Sri Lanka	1978
Ghana	1978	Sweden	1984
Greece	1983	Switzerland	1988
Guatemala	1988	Syrian Arab Republic	S
Holy See	S	Tunisia	1978
Hungary	1978	Turkey	S
Iceland	S	Uganda	S
India	1978	Ukrainian Soviet Socialist Republic	1978
Iran, Islamic Republic of	S	Union of Soviet Socialist Republics	1978
Iraq	S	United Kingdom	1978
Ireland	1982	United States of America	1980
Italy	1981	Viet Nam	1980
Japan	1982	Yemen Arab Republic ²	1977
Korea, Democratic People's Republic of	1984	Yemen, Democratic Republic of ²	1979
		Zaire	S

S means that the Treaty was signed, but no further action has been taken.

¹ In 1990 the two States merged forming Germany.

² In 1990 the two States merged forming the Republic of Yemen.

Chapter 12

The Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects (1981)

Anguel Anastassov

By virtue of this normative act (the 1981 Convention), a number of general principles were established to regulate certain aspects of relations among States. Foremost among them were the following:

1. The duty of States to refrain in their international relations from the threat or use of force against the sovereignty, territorial integrity or peaceful independence of any other State, or in any other manner inconsistent with the purposes of the United Nations;
2. The protection of the civilian population against the effects of hostilities;
3. The Parties to an armed conflict do not have the right to choose unlimited methods or means of warfare;
4. The employment of weapons, projectiles and material, and methods of warfare of a nature to cause superfluous injury or unnecessary suffering in armed conflicts is prohibited;
5. The employment of methods or means of warfare which are intended or may be expected to cause widespread, long-term and severe damage to the natural environment is prohibited.

This convention is a good example of bridging the gap between humanitarian law and some advances in military technology. It complements the principles of international humanitarian law laid down by the 1977 Diplomatic Conference on the Reaffirmation and Development of International Humanitarian Law Applicable in Armed Conflicts and by the two Additional Protocols to the Geneva Conventions of 1949. By finalizing the 1981 Convention it regulates the use of conventional weapons on the basis of the following guidelines: superfluous injury, indiscriminate effects and "ecological" criteria. That concept represents a considerable advance to the "step-by-step" work of codification carried out by the St. Petersburg Conference of 1868 and the Hague Conferences of 1889 and 1907.¹

Article 1 describes the scope of application of the Convention by basing itself on Article 2 of the 1949 Geneva Conventions for the Protection of War Victims. The 1981 Convention allows amendments to be made to it or to any annexed Protocol by

¹ See Document A/CONF.95/SR.5, p. 8.

which it is bound. The Convention states that at any time after its entry into force (2 December 1983) any State Party may propose relevant amendments to this effect. If a majority of not less than 18 so decide, a Conference will be convened to adopt such amendments. The same right also exists with respect to proposals affecting the Additional Protocols. If such Conferences have not been convened in a ten-year period following the entry into force of the Convention, any State Party may request the Depositary to convene a Conference to review its scope and operation.

According to the Protocol of non-detectable fragments (Protocol I) the use of any weapon the primary effect of which is to injure by fragments which escape detection in the human body by X-ray is prohibited. There is no officially registered data to date that such types of weapons have significant battlefield application. These devices have been used primarily for police purposes.

Protocol II deals with prohibitions or restrictions on the use of mines, booby-traps and other devices belonging to the group of delayed-action weapons which also have an indiscriminate effect. The prohibition applies to any placement of such weapons

1. which is not on, or directed at, military objectives;
2. which employs a method or means of delivery which cannot be directed at a specific military objective;
3. which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated.

Mines, booby-traps and other devices have been used indiscriminately with a view to terrorizing military and civilian populations. Clearly it is impossible for a user to avoid civilian casualties, even though they may not be intended.²

Protocol III concerns prohibitions or restrictions on the use of incendiary weapons. The history of World War II shows the common use of such weapons, which have led some scholars to propose that their use is legally justified. Following the entry into force of the 1981 Convention, the illegality of these weapons is beyond any doubt. The UN General Assembly deplored the use of napalm and other incendiary weapons in several resolutions. In Article 1 of Protocol III an incendiary weapon is defined as any weapon or munition which is primarily designed to set fire to objects or to cause burn injury to persons through the action of flame, heat, or a combination thereof, produced by a chemical reaction of a substance delivered on the target.

Present-day armed conflicts reveal the large-scale use of conventional weapons which may be deemed to be excessively injurious or to have indiscriminate effects. For example, there are different kinds of mines. On the streets of the Afghan capital Kabul, for example, a great number of mines have been deployed, which kill and injure

² *Anti-Personal Weapons*, SIPRI, Taylor & Francis Ltd., London, 1978, 199 p.

many innocent people. Those mines undoubtedly have no military target whatsoever and are oriented at ordinary human beings.³

The 1981 Convention, however, does not spell out provisions for verification or compliance. This is definitely a drawback of an otherwise well-balanced normative document. At the same time it should be recognized that the weapons listed in the Convention are, objectively speaking, difficult to identify. Therefore, the necessity of achieving a solid system of verification was raised in the statements of several States Parties. The lack of special procedures for compliance cannot but affect the credibility and effectiveness of the 1981 Convention. The idea of establishing a consultative committee of experts, competent to verify facts which might be alleged to constitute or to have constituted relevant violations was a subject of great interest. This gap could be filled in an appropriate way at the first conference to be held pursuant to Article 8 of the Convention.⁴ This would enhance the role and stature of the 1981 Convention within the international legal framework of the arms control and disarmament process.

³ See *Pravda*, 24th January 1990.

⁴ See the Declaration of France to the Convention, *Status of Multilateral of Arms Regulation and Disarmament Agreements*, Third edition, New York, 1988, 166 p.

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**Table 1: Procedures related to the Conventional Weapons Convention of 1981
Main Treaty Provisions and Monitoring and Verification Methods**

	Factfinding							Assessment procedures					
	0	1	2	3	4	5	6	7	8	9	10	11	12
Establishment of data base													
Limitation of use													
Limitation of deployment													
Limitation of testing													
Limitation of possession													
Limitation of production													
Limitation of transfer													
Prohibition of use													
Prohibition of deployment													
Prohibition of testing													
Prohibition of possession													
Prohibition of production													
Prohibition of transfer													
Destruction													

0 = No method; 1 = National Technical Means; 2 = Exchange of data; 3 = Consultation; 4 = Control Posts/Observation; 5 = On-site inspection on a State territory; 6 = On-site inspection on a non-State territory; 7 = IAEA Safeguards; 8 = Review Conference; 9 = Submission of report; 10 = Consultation; 11 = Referral to an international organization; 12 = Referral to the International Court of Justice.

For further explanation see also pages 286 and 32-34.

Explanatory note on Table 1

The Convention's prohibitions and restrictions, as outlined in the annexed Protocols to the Convention, concern the use of certain conventional weapons.

Apart from Article VIII which provides for a Review Conference, convention does not contain any verification provisions.

The Relevant Treaty Articles

CONVENTION ON PROHIBITIONS OR RESTRICTIONS
ON THE USE OF CERTAIN CONVENTIONAL WEAPONS
WHICH MAY BE DEEMED TO BE EXCESSIVELY INJURIOUS
OR TO HAVE INDISCRIMINATE EFFECTS
(10 APRIL 1981, NEW YORK)

ARTICLE 1 SCOPE OF APPLICATION

This Convention and its annexed Protocols shall apply in the situation referred to in Article 2 common to the Geneva Conventions of 12 August 1949 for the Protection of War Victims, including any situation described in paragraph 4 of Article 1 of Additional Protocol 1 to these Conventions.

ARTICLE 8 REVIEW AND AMENDMENTS

1. (a) At any time after the entry into force of this Convention any High Contracting Party may propose amendments to this Convention or any annexed Protocol by which it is bound. Any proposal for an amendment shall be communicated to the Depositary, who shall notify it to all the High Contracting Parties and shall seek their views on whether a conference should be convened to consider the proposal. If a majority, that shall not be less than eighteen of the High Contracting Parties, so agree, he shall promptly convene a conference to which all High Contracting Parties shall be invited. States not parties to this Convention shall be invited to the conference as observers.

(b) Such a conference may agree upon amendments which shall be adopted and shall enter into force in the same manner as this Convention and the annexed Protocols, provided that amendments to this Convention may be adopted only by the High Contracting Parties and that amendments to a specific annexed Protocol may be adopted only by the High Contracting Parties which are bound by that Protocol.

2. (a) At any time after the entry into force of this Convention any High Contracting Party may propose additional protocols relating to other categories of conventional weapons not covered by the

existing annexed Protocols. Any such proposal for an additional protocol shall be communicated to the Depositary, who shall notify it to all the High Contracting Parties in accordance with subparagraph 1 (a) of this Article. If a majority, that shall not be less than eighteen of the High Contracting Parties, so agree, the Depositary shall promptly convene a conference to which all States shall be invited.

(b) Such a conference may agree, with the full participation of all States represented at the conference, upon additional protocols which shall be adopted in the same manner as this Convention, shall be annexed thereto and shall enter into force as provided in paragraphs 3 and 4 of Article 5 of this Convention.

3. (a) If, after a period of ten years following the entry into force of this Convention, no conference has been convened in accordance with subparagraph 1 (a) or 2 (a) of this Article, any High Contracting Party may request the Depositary to convene a conference to which all High Contracting Parties shall be invited to review the scope and operation of this Convention and the Protocols annexed thereto and to consider any proposal for amendments of this Convention or of the existing Protocols. States not parties to this Convention shall be invited as observers to the conference. The conference may agree upon amendments which shall be adopted and enter into force in accordance with subparagraph 1 (b) above.

(b) At such a conference consideration may also be given to any proposal for additional protocols relating to other categories of conventional weapons not covered by the existing annexed Protocols. All States represented at the conference may participate fully in such consideration. Any additional protocols shall be adopted in the same manner as this Convention, shall be annexed thereto and shall enter into force as provided in paragraphs 3 and 4 of Article 5 of this Convention.

(c) Such a conference may consider whether provision should be made for the convening of a further conference at the request of any High Contracting Party if, after a similar period to that referred to in subparagraph 3 (a) of this Article, no conference has been convened in accordance with subparagraph 1 (a) or 2 (a) of this Article.

ARTICLE 9 DENUNCIATION

1. Any High Contracting Party may denounce this Convention or any of its annexed Protocols by so notifying the Depositary.

2. Any such denunciation shall only take effect one year after receipt by the Depositary of the notification of denunciation. If, however, on the expiry of that year the denouncing High Contracting Party is engaged in one of the situations referred to in Article 1, the Party shall continue to be bound by the obligations of this Convention and of the relevant annexed Protocols until the end of the armed conflict or occupation and, in any case, until the termination of operations connected with the final release, repatriation or reestablishment of the person protected by the rules of international law applicable in armed conflict, and in the case of any annexed Protocol containing provisions concerning situations in which peace-keeping, observation or similar functions are performed by United Nations forces or missions in the area concerned, until the termination of those functions.

3. Any denunciation of this Convention shall be considered as also applying to all annexed Protocols by which the denouncing High Contracting Party is bound.

4. Any denunciation shall have effect only in respect of the denouncing High Contracting Party.

5. Any denunciation shall not affect the obligations already incurred, by reason of an armed conflict, under this Convention and its annexed Protocols by such denouncing High Contracting Party in respect of any act committed before this denunciation becomes effective.

PROTOCOL I ON NON-DETECTABLE FRAGMENTS

It is prohibited to use any weapon the primary effect of which is to injure by fragments which in the human body escape detection by X-rays.

PROTOCOL II ON PROHIBITIONS OR RESTRICTION ON THE USE OF MINES, BOOBY-TRAPS AND OTHER DEVICES

ARTICLE 1 MATERIAL SCOPE OF APPLICATION

This Protocol relates to the use on land of the mines, booby-traps and other devices defined herein, including mines laid to interdict beaches, waterway crossings or river crossings, but does not apply to the use of antiship mines at sea or in inland waterways.

PROTOCOL III ON PROHIBITIONS OR RESTRICTIONS ON THE USE OF INCENDIARY WEAPONS

ARTICLE 2 PROTECTION OF CIVILIANS AND CIVILIAN OBJECTS

1. It is prohibited in all circumstances to make the civilian population as such, individual civilians or civilian objects the object of attack by incendiary weapons.

2. It is prohibited in all circumstances to make any military objective located within a concentration of civilians the object of attack by air-delivered incendiary weapons.

3. It is further prohibited to make any military objective located within a concentration of civilians the object of attack by means of incendiary weapons other than air-delivered incendiary weapons, except when such military objective is clearly separated from the concentration of civilians and all feasible precautions are taken with a view to limiting the incendiary effects to the military objective and to avoiding, and in any event to minimizing, incidental loss of civilian life, injury to civilians and damage to civilian objects.

4. It is prohibited to make forests or other kinds of plant cover the object of attack by incendiary weapons except when such natural elements are used to cover, conceal or camouflage combatants or other military objectives, or are themselves military objectives.

List of Parties

Convention on Prohibitions or Restrictions on the Use
of Certain Conventional Weapons which may be Deemed
to be Excessively Injurious or to Have Indiscriminate Effects
(as of 31 July 1990)

Afghanistan	S	Luxembourg	S
Argentina	S	Mexico	1982
Australia	1983	Mongolia	1982
Austria	1983	Morocco	S
Belgium	S	Netherlands	1987
Benin	1989	New Zealand	S
Bulgaria	1982	Nicaragua	S
Byelorussian Soviet Socialist Republic	1982	Nigeria	S
Canada	S	Norway	1983
China	1982	Pakistan	1985
Cuba	1987	Philippines	S
Cyprus	1988	Poland	1983
Czech and Slovak Federal Republic	1982	Portugal	S
Denmark	1982	Romania	S
Ecuador	1982	Sierra Leone	S
Egypt	S	Spain	S
Finland	1982	Sudan	S
France	1988	Sweden	1982
German Democratic Republic ¹	1982	Switzerland	1982
Germany, Federal Republic of ¹	S	Togo	S
Greece	S	Tunisia	1987
Guatemala	1983	Turkey	S
Hungary	1982	Ukrainian Soviet Socialist Republic	1982
Iceland	S	Union of Soviet Socialist Republics	1982
India	1984	United Kingdom	S
Ireland	S	United States of America	S
Italy	S	Viet Nam	S
Japan	1982	Yugoslavia	1983
Lao People's Democratic Republic	1983		
Liechtenstein	1989		

S means that the Treaty was signed, but no further action has been taken.

¹ In 1990 the two States merged forming Germany.

Chapter 13

The Rarotonga Treaty (1985)

Trevor Findlay

The South Pacific Nuclear Free Zone (SPNFFZ) Treaty or Treaty of Rarotonga was initiated by Australia and negotiated by the South Pacific Forum, a regional organization comprising all independent and self-governing States in the South Pacific. Members at that time were: Australia, Cook Islands, Fiji, Kiribati, Nauru, New Zealand, Niue, Papua New Guinea, Solomon Islands, Tonga, Tuvalu, Vanuatu and Western Samoa. The Treaty was adopted by the Forum at Rarotonga in the Cook Islands in August 1985. It entered into force on 11 December 1986 with its eighth ratification, that of Australia. All of the original Forum Members except Tonga and Vanuatu have signed and ratified the Treaty. Two new Members of the Forum, the Federated States of Micronesia (FSM) and the Republic of the Marshall Islands, have not yet acceded to the Treaty.¹

I - Objectives of the Treaty

The principal aims of the Treaty include those traditionally associated with nuclear-weapon-free zones: to codify in international law the intention of the South Pacific States not to acquire or host nuclear weapons, to secure the region from nuclear threat or attack, and to garner the support of the nuclear weapon States in achieving such goals. Hence the Treaty prohibits Parties from manufacturing, possessing, controlling or acquiring by other means any nuclear explosive device anywhere inside or outside the zone. Each Party also undertakes to prevent stationing of nuclear weapons in its territory, although it is free to permit visits and transit of aircraft and ships which may be carrying nuclear weapons. In addition, each Party undertakes not to supply nuclear material or equipment to any other State unless under International Atomic Energy Agency (IAEA) safeguards, and to prevent the testing of any nuclear explosive device on its territory.

In common with the Treaty of Tlatelolco, Protocol I asks metropolitan Powers with Territories within the zone (the United States, the United Kingdom and France) to adopt three of the same undertakings for their Territories as the regional States have adopted in the main body of the Treaty. In addition, as in the case of Tlatelolco and in accordance with the United Nations guidelines on nuclear-weapon-free zones, Protocol II seeks undertakings from the five acknowledged nuclear weapon States to respect the status of the zone and to refrain from the use or threat of use of nuclear weapons against zone Parties.

¹ Document of the Preparatory Committee for the Fourth Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, NPT/CONF.IV.II/15, 26 July 1990, pp. 2-3.

There are, however, two additional aims of the Treaty of Rarotonga not found in the Tlatelolco model. One is to ban the dumping by treaty Parties of radioactive wastes and other radioactive matter at sea anywhere in the zone and to prevent such dumping within their territorial limits by other States. A second is to prevent nuclear testing by outside Powers - most obviously France - in the South Pacific. The ban on dumping is contained in the body of the Treaty, while Protocol III invites the nuclear weapon States to abjure nuclear testing in the zone.

The zone covers a vast area stretching from the Latin American Nuclear-Weapon-Free Zone border in the east to the west coast of Australia in the west and from the border of the Antarctic Treaty in the south to the equator in the north (with adjustments for those parts of Papua New Guinea, Kiribati and Nauru located in the Northern Hemisphere). Unlike the Treaty of Tlatelolco, however, the Rarotonga Treaty does not purport to apply to areas of the high seas within the zone, except where the zonal States voluntarily surrender their rights both to test nuclear devices (and request the nuclear Powers not to do so) and to dump radioactive waste. The negotiators of the Treaty adopted an "incomplete patchwork"² or "picture frame"³ approach whereby the main prohibitions apply only to the territories of the Parties.

II - The Verification Provisions

According to the chairman of the South Pacific Forum Working Group which negotiated the draft treaty, David Sadleir, it was considered important that the Treaty include an "effective verification system . . . so as to provide assurances that the Treaty was not breached, and to constitute a good precedent for any future nuclear-free-zone treaties in other parts of the world".⁴

Despite this, the verification and compliance provisions of the Treaty of Rarotonga are relatively simple and designed to accord with the realities of the region. These include the fact that all Members of the South Pacific Forum except Vanuatu were already Parties to the 1968 Nuclear Non-Proliferation Treaty (NPT) and hence subject to the normal verification processes of the IAEA. Moreover, none of these States, with the exception of Australia and possibly New Zealand, has the technological capability, industrial base or economic strength to enable it to build nuclear weapons. Only Australia possesses a nuclear industry of any significance. Finally, since most Forum Members are least developed countries, it was also important to limit the cost of the Treaty's verification system by keeping it simple.

² David Sadleir, "Report by the Chairman of the Working Group on a South Pacific Nuclear-Free-Zone to the South Pacific Forum, Rarotonga, 4-6 August 1985", Department of Foreign Affairs, Canberra, 1985, p. 13.

³ Greg Fry, "The South Pacific Nuclear-Free Zone", in SIPRI, *World Armaments and Disarmament: SIPRI Yearbook 1986*, Oxford University Press for the Stockholm International Peace Research Institute (SIPRI), Oxford, 1986, p. 503.

⁴ Sadleir, p. 36.

The Treaty's verification and compliance arrangements (quaintly referred to as the "control system") are set out in Articles 8 to 10 and annexes 2 to 4. They comprise the following:

1. Reports and exchanges of information;
2. Consultations within a Consultative Committee;
3. The application of IAEA safeguards to peaceful nuclear activities, and
4. A complaints procedure, via the Consultative Committee and the South Pacific Forum, including the option of on-site inspections.

According to the Working Group Chairman, the two key parts of this scheme are the IAEA safeguards system and the right granted to the Consultative Committee of "challenge" on-site inspections.⁵

REPORTS AND EXCHANGES OF INFORMATION

The reporting and information exchange requirements of Parties are passive rather than active, negative rather than positive. Each Party is simply required to report as soon as possible to the depositary - the Director of the South Pacific Bureau for Economic Co-operation (SPEC) - "any significant event within its jurisdiction affecting the implementation" of the Treaty.⁶ The Director is enjoined to circulate such reports promptly to all Parties. The Parties also commit themselves to "endeavour" to keep each other informed, via the Director, of any other matter "arising under or in relation to the Treaty".⁷

Only the Director is required to report regularly on the operation of the Treaty. This is to be done annually to the South Pacific Forum. It is the practice of NPT Review conferences to request similar reports under Article VII of the NPT relating to regional non-proliferation arrangements.

CONSULTATIONS

Any Party may request the Director of SPEC to convene a meeting of the Treaty's Consultative Committee for "consultation and co-operation" on any matter relating to the Treaty. The Consultative Committee is to comprise representatives of all the Parties and be chaired by the Party which last hosted the annual South Pacific Forum Heads of Government Meeting. A quorum will be constituted by half the Parties. Decisions will be made by consensus, or failing consensus, by a two-thirds majority of those present and voting. The only exception is treaty amendments, which require

⁵ *Ibid.*

⁶ Treaty of Rarotonga, Article 9.1.

⁷ Treaty of Rarotonga, Article 9.2.

unanimity of the Parties. The Committee is free to adopt other rules of procedure as it chooses.

IAEA SAFEGUARDS

Each Party is required to negotiate, within 18 months of ratifying or acceding to the Treaty, a safeguards agreement with IAEA in Vienna. Such safeguards are to be "full-scope"; that is, applicable to "all source or special fissionable material in all peaceful nuclear activities within the territory of the party, under its jurisdiction or carried out under its control anywhere".⁸ For any Parties not party to the NPT, the safeguards agreement under Rarotonga is to be modelled on the NPT agreement contained in IAEA document INFCIRC/153 (corrected). Each Party undertakes to provide IAEA compliance assessments to other Parties on request and to advise the SPEC director of any findings of the IAEA Board of Governors in relation to such assessments.

COMPLAINTS PROCEDURE

The Treaty provides for a series of sequential steps to be taken by Parties which suspect a violation of the agreement. First, the complainant is obliged to protest directly to the Party suspected of a violation, allowing reasonable time for an explanation and possible resolution of the matter. If not resolved, the complainant may then refer the matter to the SPEC Director with a request for a Consultative Committee meeting.

The Treaty negotiators clearly expected that consultations would in most cases be sufficient to resolve compliance questions and that "challenge" on-site inspections would only be used in exceptional circumstances.⁹ Nonetheless the Treaty allows the Consultative Committee, after hearing both sides of the case, to order such inspections in the territory of the alleged violator or elsewhere. The Committee would then appoint a team of qualified inspectors in consultation with the Parties involved.

While a representative of the suspected Party may accompany the inspection, the team is subject only to the direction of the Consultative Committee. Such direction must, however, take account of the legitimate interests of the Party complained of in complying with its international obligations and not duplicate IAEA safeguards procedures.

While the suspected State is required to give inspectors the necessary privileges and amenities and "full and free access" to all "relevant" information and places within its territory, this is balanced by the requirement that inspectors give "due respect" to the State's laws.

The inspectors are required to report the relevant facts and their conclusions as quickly as possible to the Consultative Committee. The Committee will then report

⁸ Treaty of Rarotonga, Article III.

⁹ Sadleir, p. 36.

to all Members of the South Pacific Forum, giving its decision on whether there has been a treaty violation. If a violation is recorded, or on request of the complainant or the suspected State, the Forum is obliged to meet promptly.

The Treaty does not provide for sanctions against violators or, unlike other multilateral arms limitation agreements, for referral of compliance matters to a higher authority such as the UN Security Council or the UN General Assembly. According to the Working Group Chairman the compliance arrangements explicitly recognize the Forum as "the supreme political body in the region".¹⁰

III - Verification Practice

The verification system for the Treaty of Rarotonga has never been tested by an alleged or actual violation. No violation of the Treaty was recorded, for instance, in the report presented by the South Pacific Forum to the fourth NPT Review Conference held in August/September 1990.¹¹ Whether violations of the Treaty could be detected is another question.

ACQUISITION OF NUCLEAR WEAPONS

An attempted diversion of nuclear material from peaceful uses to nuclear weapons is likely to be detected by the IAEA safeguards system. In view of the small size and open nature of the societies of the Parties to the Treaty, other aspects of any illicit attempt to acquire nuclear weapons would be detected by monitoring capabilities operating outside the formal treaty provisions. These include human intelligence and satellite monitoring by the two Super Powers and others. Seismic and atmospheric fallout monitoring by Australia and New Zealand can verify compliance with the nuclear testing undertakings of Parties, both to the Treaty proper and the nuclear testing protocol. The acquisition of nuclear weapons from a State outside the zone would be more difficult to verify, except by on-site inspection.

STATIONING OF NUCLEAR WEAPONS

The verification of compliance with the ban on the stationing of nuclear weapons is even more problematic. Of all aspects of the Treaty it holds the greatest potential for controversy. This is partly because of the definitional fuzziness of the term "stationing" and partly because it is difficult to detect stored nuclear weapons (on ships, aircraft or land) at a distance.

The definitional problem arises from the Treaty's failure to quantify the temporal difference between "stationing" on the one hand and, on the other, "visits", "transit"

¹⁰ *Ibid.*, p. 37.

¹¹ Document of the Preparatory Committee for the Fourth Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons, NPT/CONF.IV/PC.II/15, 26 July 1990.

and "navigation . . . in a manner not covered by the rights of innocent passage, archipelagic sea lane passage or transit passage of straits".¹² It is completely unclear, for example, at what point a long-term port "visit" by a nuclear-armed warship becomes "stationing".

Although the time element question was addressed extensively by the Forum Working Group, no agreement was possible because of Members' varying attitudes towards accepting visits of nuclear ships to their ports. The Working Group Chairman reported that it was "noted that should any Party have doubts or questions concerning the duration or pattern of visits, it would be open to it to resort to the consultation provisions of the draft provisions of the draft Treaty in order to seek clarification". While true, this simply foisted the Working Group's disagreement onto the verification and compliance mechanism of the Treaty itself.

Even if "stationing" could be precisely defined, there would still be the problem of proving that nuclear weapons were present. Here the Consultative Committee would confront all the dilemmas facing verification of a ban on nuclear-armed ship visits that have been experienced by New Zealand. Short of boarding a vessel or aircraft to conduct an inspection, it is difficult to tell if nuclear weapons are present unless openly deployed. Even then, sophisticated equipment unavailable to most of the Forum States is required to detect the presence of fissionable material. Shielding is also theoretically possible. Not only are the nuclear weapon States averse to permitting such inspections, but they also rely on a "neither confirm nor deny" policy to avoid making unilateral declarations about the presence of nuclear weapons.

While for broad verification purposes it could be presumed that nuclear-capable vessels were actually carrying nuclear weapons, so that the only question to be resolved was length of stay, in a strict technical sense Rarotonga's ban on stationing is unverifiable under its existing terms and arrangements.

ON-SITE INSPECTION

It was probably with the sensitivity of the stationing issue in mind that Australia has imposed unilateral restrictions on its obligation to receive "challenge" on-site inspections under the Treaty. As Michael Hamel-Green has noted, Australian legislation to implement the Treaty has introduced "a complicated system whereby a Treaty inspector cannot simply conduct an inspection irrespective of whether those in charge of a vessel, aircraft, vehicle or premises consent to the inspection".¹³ The Treaty inspector must be accompanied by an Australian inspector with a warrant from a magistrate authorizing entry. A magistrate may refuse the warrant if the inspector has not provided information the magistrate requires or if the magistrate is not satisfied there are reasonable grounds for an inspection.

¹² Treaty of Rarotonga, Article 5.

¹³ Michael Hamel-Green, *The South Pacific Nuclear Free Zone Treaty: A Critical Assessment*, Monograph No. 8, Peace Research Centre, Australian National University, Canberra, 1990, p. 49.

These Australian preconditions are arguably illegal under the terms of the Treaty. Certainly the Treaty requires inspectors to discharge their duties with "due respect" for the laws of the Party being inspected, including the Australian requirement for a magistrate's approval. However inspectors could not be expected to comply, for instance, with domestic law which banned international on-site inspections altogether - which may be the practical effect of the Australian legislation. Moreover, the Treaty states that inspectors shall take orders only from the Consultative Committee and that the Party being inspected shall give inspectors "full and free access to all information and places within its territory" relevant to the inspection.¹⁴ Further, Australia's concerns about frivolous inspection requests (which is the putative reason for its unilateral requirements) should at least be partly allayed by the fact that all Parties would be represented on the Consultative Committee and that consensus is the preferred mode of decision-making.

The wording of the Treaty does not make it entirely clear whether Parties are legally obliged to accept on-site inspections other than those carried out for IAEA safeguards purposes. The Treaty says only that the Consultative Committee "shall direct" that an inspection take place and that neither consultation on the appointment of inspectors nor the right of the complained of State to appoint representatives to accompany them shall delay the work of the inspection team. The Treaty says nothing about a State's right to refuse an inspection, nor that it is obliged to accept one. Moreover, no time limit is specified, such as 24 hours or 48 hours after an inspection is called for, within which an inspection must begin.

While it is understandable that the Treaty framers may have regarded an on-site inspection in the South Pacific to be an extremely unlikely eventuality, nonetheless their draft is not a good model for future arms limitation agreements, at least in respect of on-site inspections. The 1986 Stockholm Agreement, for instance, mandated automatic acceptance of challenge on-site inspections within 24 hours, with the inspection to commence within the next 12 hours at the latest.¹⁵

NUCLEAR WASTE DUMPING

The ban on nuclear waste dumping is also difficult to monitor and relies heavily on the good will of the Treaty Parties. Most Parties do not, however, possess more than very small amounts of low-level radioactive wastes. The ban on nuclear waste dumping was directed more at outside Powers, such as Japan, with large amounts of such waste to dispose of. It is conceivable that on-site inspection could be used to verify compliance with the ban in some instances, depending on the depth of the ocean at the alleged dumping point.

¹⁴ Treaty of Rarotonga, annex 4.6.

¹⁵ Victor-Yves Ghebali, *Confidence-Building Measures within the CSCE Process: Paragraph-by-Paragraph Analysis of the Helsinki and Stockholm Regimes*, Research Paper No. 3, UNIDIR, Geneva, 1989, p. 72.

THE PROTOCOL UNDERTAKINGS

No verification system is established by the Treaty for verifying compliance with its three protocols. The "control system" outlined in Article 8 is established by the Parties only for "the purpose of verifying compliance with *their* (emphasis added) obligations . . .". Ramesh Thakur calls this "the most serious potential gap in the SPNFZ regime".¹⁶

This lacuna is most noticeable in relation to Protocol I, which obliges extra-zonal States with Territories in the zone to apply three of the Articles of the main Treaty to such territories. Thus the principal undertakings in the Treaty of Rarotonga are subject to verification when applied to independent South Pacific Parties but not when applied to the South Pacific Territories of France, the United Kingdom and the United States (if they become Parties to the protocol). Ramesh Thakur illustrates the practical significance of this gap in Rarotonga with the case of British military activity during the Falklands War in relation to the Treaty of Tlatelolco.¹⁷ As a Party to Protocol I of that Treaty, Britain was obliged not to introduce nuclear weapons into the Falklands or its territorial waters. While it is not clear whether or not Britain violated this ban, neither is it clear whether a verification system, even if fully in place, would have been able to detect such a violation. In this respect the verification of Protocol I of Rarotonga faces the same dilemmas as the verification of the ban on "stationing" in the main body of the Treaty.

As for Protocol II, verification of the "negative security assurances" sought from the nuclear weapon States (undertakings not to use or threaten to use nuclear weapons) is problematic. Being declarations of intent, they are not verifiable until they have been broken - unlike, for instance, the attempted acquisition of a nuclear capability, which has a long lead-time.

The ban on nuclear testing by the nuclear weapon States contained in Protocol III is verifiable by the seismic and atmospheric fallout detection capabilities of Australia and New Zealand.

IV - Proposals to Amend the Verification Procedures

While there have been no proposals to amend the Treaty's verification procedures since it entered into force, there were several proposals made during the original negotiation of the Treaty in which verifiability was a key consideration. These were a proposed ban on transit through the high seas of the zone by ships capable of carrying nuclear weapons and a ban on missile testing in the region. Both were rejected, in part because of the difficulties of verifying compliance.

¹⁶ Ramesh Thakur, "The Treaty of Rarotonga", in David Pitt and Gordon Thompson (eds.), *Nuclear-Free Zone*, Croom Helm, London, 1987, p. 41.

¹⁷ *Ibid.*

V - Effectiveness of the Verification Procedures

The effectiveness of the verification procedures for the Rarotonga Treaty has not been demonstrated or refuted in practice. However criticisms have been made of the verification system, most notably by Michael Hamel-Green in comparing Rarotonga with the Treaty of Tlatelolco.¹⁸

The first criticism is that Rarotonga, unlike Tlatelolco, does not establish a dedicated verification agency. It is alleged that, by devolving the compliance tasks to SPEC and the South Pacific Forum, less time and fewer resources can be devoted to such tasks and less expertise and impartiality developed. While this may be true (except for impartiality), it is also true that compared with Latin America the threat of a regional State developing nuclear weapons is much slighter. Latin America has a number of medium-sized Powers capable of producing nuclear weapons should they choose to do so, whereas the South Pacific contains mostly micro-States incapable of basic industrialization, much less nuclear weapons acquisition. In this sense the verification system for Rarotonga is well matched its political and economic environment - as a good verification system should be.

The implied lack of impartiality in the South Pacific case is, however, difficult to substantiate. There is no *ipso facto* reason why a dedicated verification agency such as OPANAL in the Latin American case should be more impartial than Rarotonga's Consultative Committee or the South Pacific Forum. In both cases they are composed of the regional State Parties and, since verification of compliance is essentially a political activity rather than a technical one, both are likely to suffer from a similar degree of politicization. Rarotonga's structure is simply more suited to the "Pacific way" of informality and consensus-seeking than to the more formal diplomatic style of the Latin Americans.

A second criticism of Rarotonga is that it lacks a regularized institutionalized reporting system. It is alleged that in a region heavily dependent on Australian, New Zealand and American economic aid, the lack of such a system could be a disincentive for island States to lodge a complaint when they suspect a treaty violation has occurred. While a regularized system would certainly be an improvement, it must be asked whether there is really a need for it and whether it would make States more likely to lodge a complaint. First, even with a regularized system in place, a State would still have to lodge a specific complaint, perhaps as part of an annual or semi-annual report; if an urgent complaint arose in the period between such reports, it would have to be lodged on an *ad hoc* basis. Secondly, if the influence of foreign aid is as strong as alleged, then a regularized reporting system would make no difference. Thirdly, there is much evidence that the Pacific States, whether dependent on aid or not, are not in the least reluctant to lodge complaints about the activities of larger States. Examples include: the near unanimous concern expressed about the United States plans for high-temperature incineration of chemical weapons at Johnston Atoll;

¹⁸ Hamel-Green, pp. 47-49.

the successful campaign against activities of US tuna boats, the protests against Japanese and Taiwanese drift-net fishing, and continuing opposition to French nuclear testing (despite increases in French aid to Pacific States).

A third criticism is that Rarotonga has no equivalent of the Tlatelolco verification agency's right to seek information on its own initiative about "activities or circumstances" connected with the Treaty. This criticism fails to take into account the fact that independent action by a verification agency, even just information-seeking, may be so politically sensitive that it cannot occur. Verification agencies are much more likely to act on the complaint of a State Party than to initiate action themselves.

A fourth criticism of Rarotonga is that the complaints procedure is not as rigorous as under the Treaty of Tlatelolco, since the latter specifically provides for complaints to be lodged on the suspicion that a breach of the Treaty is about to occur, rather than after it has occurred. This is an illusory point. Rarotonga Parties are not only able to lodge such complaints (although this is not specified in the Treaty), but they are enjoined generally to keep each other informed on "matters arising or in relation to this Treaty".¹⁹ It is true however that Rarotonga is weaker in its on-site inspection provisions, in that Tlatelolco mandates automatic on-site inspection as soon as a Party requests one. Rarotonga's Consultative Committee is only obliged to authorize an inspection when it "decides that there is sufficient substance in the complaint" to warrant one.²⁰ This may not necessarily be a disadvantage in that it protects Parties from frivolous or malicious demands for on-site inspection. Tlatelolco's automaticity may be unwise. The Rarotonga system also permits informal consultative processes to be exhausted before resorting to the politically sensitive option of on-site inspection.

Another alleged strength of Tlatelolco, compared with Rarotonga, is its amazing disregard of States' rights to secrecy in regard to on-site inspectors. Nowhere does the Treaty say that inspectors must respect the domestic law of the inspected State. Rarotonga lies at the other extreme in permitting the type of national legislation adopted by Australia to determine the conditions under which on-site inspections may occur. While Tlatelolco is in this respect an admirable attempt to assert the authority of an international organization, it is unrealistic to expect any State to give on-site inspectors free reign, including access to sensitive facilities. In practice, there is always a trade-off in on-site inspections between over-intrusiveness on the one hand and sufficient access to prove compliance on the other - whether or not this is encapsulated in treaty language.

A final criticism of Rarotonga is that its complaints procedure stops at the South Pacific Forum; by contrast, Tlatelolco provides for alleged violations to be referred to the UN General Assembly, the Security Council, the Organization of American States and the IAEA. While the Rarotonga Parties could refer serious matters to outside bodies, regardless of the provisions of the Treaty, mention of the supreme international bodies in the Treaty would have been useful. This is especially so given

¹⁹ Treaty of Rarotonga, Article 9.1.

²⁰ Treaty of Rarotonga, annex 4.4.

the relative powerlessness of most of the South Pacific States. The potential assistance of the United Nations, particularly the Security Council and the IAEA, would appear to be a natural and essential pillar of any treaty's verification system.

VI - Conclusion

The verification system for the Treaty of Rarotonga is, on the whole, well suited to the political, military and economic conditions of the South Pacific. It is lean, economical and relies heavily on the "Pacific way" of consensus-building and informality. Despite the hopes of its negotiators it is not, however, path-breaking since it lacks some of the rigour of the Treaty of Tlatelolco and subsequent arms limitation agreements. It also attempts to verify compliance in problematic areas like stationing of nuclear weapons and nuclear waste dumping. In addition, apart from the involvement of the IAEA in applying nuclear safeguards, it is an inward-looking system, perhaps suited to the "Pacific way" of managing conflict, but removed from the broader conflict-resolution processes of the international community.

Annexes

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Table 1: Procedures related to the Rarotonga Treaty of 1985
Main Treaty Provisions and Monitoring and Verification Methods

	Factfinding							Assessment procedures					
	0	1	2	3	4	5	6	7	8	9	10	11	12
Establishment of data base													
Limitation of use													
Limitation of deployment													
Limitation of testing													
Limitation of possession													
Limitation of production													
Limitation of transfer													
Prohibition of use													
Prohibition of deployment													
Prohibition of testing													
Prohibition of possession													
Prohibition of production													
Prohibition of transfer													
Destruction													

0 = No method; 1 = National Technical Means; 2 = Exchange of data; 3 = Consultation; 4 = Control Posts/Observation; 5 = On-site inspection on a State territory; 6 = On-site inspection on a non-State territory; 7 = IAEA Safeguards; 8 = Review Conference; 9 = Submission of report; 10 = Consultation; 11 = Referral to an international organization; 12 = Referral to the International Court of Justice.

For further explanation see also pages 304 and 32-34.

Explanatory note on Table 1

Article 3 of the Treaty of Rarotonga prohibits production, acquisition and possession, Article 5 prohibits stationing, and Article 6 prohibits the testing of any nuclear device by treaty parties within the zone.

During the 1950s atmospheric tests were conducted in the region by the US and the UK. Both countries became parties to the PTBT in 1963, after which both ceased nuclear testing in the South Pacific. Between 1966 and 1974 France conducted atmospheric nuclear tests in the South Pacific. Since 1974 these have been conducted underground.

Three Protocols are attached to the Treaty. Protocol 1 invites States which have territories in the region for which they are "internationally responsible" (i.e. France, UK, USA) to respect the prohibitions in so far as they relate to the manufacture, stationing and testing of any nuclear devices within such territories. Protocols 2 and 3, which are open for signature by the nuclear weapon states, deal respectively with negative security assurances for the treaty parties and with an undertaking not to conduct any nuclear test in the zone.

Protocol 1 has thus far not been signed by any State.

Protocol 2 and 3 have been signed and ratified by China and the USSR.

Factfinding methods

The methods specified for the verification of compliance with the treaty provisions are the exchange of data, consultation and on-site inspection (Articles 9 and 10).

The consultation process is detailed in Annex 3 which deals with the Consultative Committee, and Annex 4 which deals with the complaints procedure. On-site inspections to be carried out at the request of the Consultative Committee are detailed in Annex 4. IAEA safeguards are provided for in Article 8(c) and Annex 2 for "...the verification of the non-diversion of nuclear material from peaceful nuclear activities to nuclear explosive devices".

Assessment procedures

The assessment of facts consists of consultations in the Consultative Committee including on the basis of reports by its inspectors. The Committee automatically informs the South Pacific Forum of any complaints. The Forum is the final arbiter of any allegations of non-compliance with the Treaty.

The Treaty of Rarotonga is one of the rare treaties in which responses to a treaty violation are specified in advance. Annex 4 paragraph 9 provides for a meeting of the South Pacific Forum in case of a breach of obligations by a party. Article 13 specifically provides for the possibility of withdrawal from the Treaty if a violation is proven.

The Relevant Treaty Articles

SOUTH PACIFIC NUCLEAR FREE ZONE TREATY (6 AUGUST 1985, RAROTONGA)

ARTICLE 3

RENUNCIATION OF NUCLEAR EXPLOSIVE DEVICES

Each Party undertakes:

(a) not to manufacture or otherwise acquire, possess or have control over any nuclear explosive device by any means anywhere inside or outside the South Pacific Nuclear Free Zone;

(b) not to seek or receive any assistance in the manufacture or acquisition of any nuclear explosive device;

(c) not to take any action to assist or encourage the manufacture or acquisition of any nuclear explosive device by any State.

ARTICLE 5

PREVENTION OF STATIONING OF NUCLEAR EXPLOSIVE DEVICES

1. Each Party undertakes to prevent in its territory the stationing of any nuclear explosive device.

2. Each Party in the exercise of its sovereign rights remains free to decide for itself whether to allow visits by foreign ships and aircraft to its ports and airfields, transit of its airspace by foreign aircraft, and navigation by foreign ships in its territorial sea or archipelagic waters in a manner not covered by the rights of innocent passage, archipelagic sea lane passage or transit passage of straits.

ARTICLE 6

PREVENTION OF TESTING OF NUCLEAR EXPLOSIVE DEVICES

Each Party undertakes:

(a) to prevent in its territory the testing of any nuclear explosive device;

(b) not to take any action to assist or encourage the testing of any nuclear explosive device by any State.

ARTICLE 7

PREVENTION OF DUMPING

1. Each Party undertakes:

(a) not to dump radioactive wastes and other radioactive matter at sea anywhere within

the South Pacific Nuclear Free Zone;

(b) to prevent the dumping of radioactive wastes and other radioactive matter by anyone in its territorial sea;

(c) not to take any action to assist or encourage the dumping of anyone of radioactive wastes and other radioactive matter at sea anywhere within the South Pacific Nuclear Free Zone;

(d) to support the conclusion as soon as possible of the proposed Convention relating to the protection of the natural resources and environment of the South Pacific region and its Protocol for the prevention of pollution of the South Pacific region by dumping, with the aim of precluding dumping at sea of radioactive wastes and other radioactive matter by anyone anywhere in the region.

2. Paragraphs 1(a) and 1(b) of this Article shall not apply to areas of the South Pacific Nuclear Free Zone in respect of which such a Convention and Protocol have entered into force.

ARTICLE 8

CONTROL SYSTEM

(1) The Parties hereby establish a control system for the purpose of verifying compliance with their obligations under this Treaty.

(2) The control system shall comprise:

(a) reports and exchange of information as provided for in Article 9;

(b) consultations as provided for in Article 10 and Annex 4 (1);

(c) the application to peaceful nuclear activities of safeguards the IAEA as provided for in Annex 2;

(d) a complaints procedure as provided for in Annex 4.

ARTICLE 9

REPORTS AND EXCHANGES OF INFORMATION

(1) Each Party shall report to the Director of the South Pacific Bureau for Economic Co-operation (the Director) as soon as possible any significant event within its jurisdiction affecting the implementation of this Treaty. The Director shall circulate such reports promptly to all Parties.

(2) The Parties shall endeavour to keep each other informed on matters arising under or in relation to this Treaty. They may exchange information by communicating it to the Director, who shall circulate it to all Parties.

(3) The Director shall report annually to the South Pacific Forum on the status of this Treaty and

matters arising under or in relation to it, incorporating reports and communications made under paragraphs 1 and 2 of this Article and matters arising under Articles 8 (2)(d) and 10 and Annex 2 (4).

ARTICLE 10

CONSULTATIONS AND REVIEW

Without prejudice to the conduct of consultations among Parties by other means, the Director, at the request of any Party, shall convene a meeting of the Consultative Committee established by annex 3 for consultation and co-operation on any matter arising in relation to this Treaty or for reviewing its operation.

(...)

IAEA SAFEGUARDS

ANNEX 2

(1) The safeguards referred to in Article 8 shall in respect of each Party be applied by the IAEA as set forth in an agreement negotiated and concluded with the IAEA on all source or special fissionable material in all peaceful nuclear activities within the territory of the Party, under its jurisdiction or carried out under its control anywhere.

(2) The agreement referred to in paragraph 1 shall be, or shall be equivalent in its scope and effect to, an agreement required in connection with the NPT on the basis of the material reproduced in document INFCIRC/153 (Corrected) of the IAEA. Each Party shall take all appropriate steps to ensure that such an agreement is in force for it not later than 18 months after the date of entry into force for that Party of this Treaty.

(3) For the purpose of this Treaty, the safeguards referred to in paragraph 1 shall have as their purpose the verification of the non-diversion of nuclear material from peaceful nuclear activities to nuclear explosive devices.

(4) Each Party agrees upon the request of any other Party to transmit to that Party and to the Director for the information of all Parties a copy of the overall conclusions of the most recent report by the IAEA on its inspection activities in the territory of the Party concerned, and to advise the Director promptly of any subsequent findings of the Board of Governors of the IAEA in relation to those conclusions for the information of all Parties.

CONSULTATIVE COMMITTEE

ANNEX 3

(1) There is hereby established a Consultative Committee which shall be convened by the Director from time to time pursuant to Articles 10 and 11 and Annex 4 (2). The Consultative Committee shall be constituted of representatives of the Parties, each Party being entitled to appoint one representative who may be accompanied by advisers. Unless otherwise agreed, the Consultative Committee shall be chaired at any given meeting by the representative of the Party which last hosted the meeting of Heads of Government of Members of the South Pacific Forum. A quorum shall be constituted by representatives of half the Parties, subject to the provisions of Article 11, decisions of the Consultative Committee shall be taken by consensus or, failing consensus, by a two-thirds majority of those present and voting. The Consultative Committee shall adopt such other rules of procedure as it sees fit.

(2) The costs of the Consultative Committee, including the costs of special inspections pursuant to Annex 4, shall be borne by the South Pacific Bureau for Economic Co-operation. It may seek special funding should this be required.

COMPLAINTS PROCEDURE

ANNEX 4

(1) A Party which considers that there are grounds for a complaint that another Party is in breach of its obligations under this Treaty shall, before bringing such a complaint to the Director, bring the subject matter of the complaint to the attention of the Party complained of and shall allow the latter reasonable opportunity to provide it with an explanation and to resolve the matter.

(2) If the matter is not so resolved, the complainant Party may bring the complaint to the Director with the request that the Consultative Committee be convened to consider it. Complaints shall be supported by an account of evidence of breach of obligations known to the complainant Party. Upon receipt of a complaint the Director shall convene the Consultative Committee as quickly as possible to consider it.

(3) The Consultative Committee, taking account of efforts made under paragraph 1, shall afford the Party complained of a reasonable opportunity to provide it with an explanation of the matter.

(4) If, after considering any explanation given to it by the representatives of the Party complained of, the Consultative Committee decides that there is sufficient substance in the complaint to warrant a special inspection in the territory of that Party elsewhere, the Consultative Committee shall direct that such special inspection be made as quickly as possible by a special inspection team of three suitably qualified special inspectors appointed by the Consultative Committee in consultation with the complained of and complainant Parties, provided that no national of either Party shall serve on the special inspection team. If so requested by the Party complained of, the special inspection team shall be accompanied by representatives of that Party. Neither the right of consultation on the appointment of special inspectors, nor the right to accompany special inspectors, shall delay the work of the special inspection team.

(5) In making a special inspection, special inspectors shall be subject to the direction only of the Consultative Committee and shall comply with such directives concerning tasks, objectives, confidentiality and procedures as may be decided upon by it. Directives shall take account of the legitimate interests of the Party complained of in complying with its other international obligations and commitments and shall not duplicate safeguards procedures to be undertaken by the IAEA pursuant to agreements referred to in Annex 2 (1). The special inspectors shall discharge their duties with due respect for the laws of the Party complained of.

(6) Each Party shall give to special inspectors full and free access to all information and places within its territory which may be relevant to enable the special inspectors to implement the directives given to them by the Consultative Committee.

(7) The Party complained of shall take all appropriate steps to facilitate the special inspection, and shall grant to special inspectors privileges and immunities necessary for the performance of their functions, including inviolability for all papers and documents and immunity from arrest, detention and legal process for acts done and words

spoken and written, for the purpose of the special inspection.

(8) The special inspectors shall report in writing as quickly as possible to the Consultative Committee, outlining their activities, setting out relevant facts and information as ascertained by them, with supporting evidence and documentation as appropriate, and stating their conclusions. The Consultative Committee shall report fully to all Members of the South Pacific Forum, giving its decision as to whether the Party complained of is in breach of its obligations under this Treaty.

(9) If the Consultative Committee has decided that the Party complained of is in breach of its obligations under this Treaty, or that the above provisions have not been complied with, or at any time at the request of either the complainant or complained of Party, the Parties shall meet promptly at a meeting of the South Pacific Forum.

PROTOCOL 1

ARTICLE 1

Each Party undertakes to apply, in respect of the territories for which it is internationally responsible situated within the South Pacific Nuclear Free Zone, the prohibitions contained in Articles 3, 5 and 6 insofar as they relate to the manufacture, stationing and testing of any nuclear explosive device within those territories, and the safeguards specified in Article 8(2)(c) and Annex 2 of the Treaty.

PROTOCOL 2

ARTICLE 1

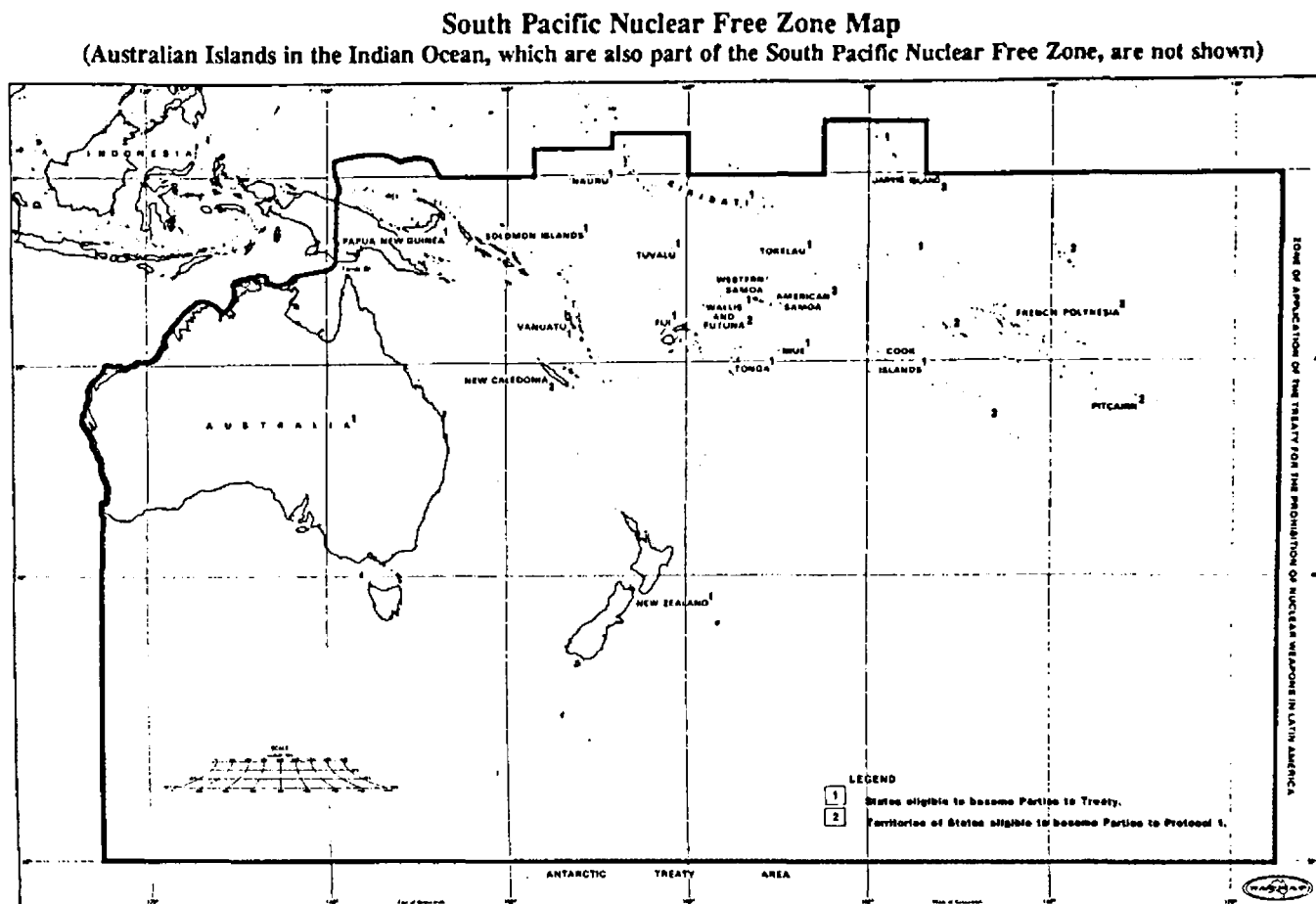
Each Party undertakes not to use or threaten to use any nuclear explosive device against:

- (a) Parties to the Treaty; or
- (b) any territory within the South Pacific Nuclear Free Zone for which a State has become a Party to Protocol 1 is internationally responsible.

PROTOCOL 3

ARTICLE 1

Each Party undertakes not to test any nuclear explosive device anywhere within the South Pacific Nuclear Free Zone.



Source: United Nations Department for Disarmament Affairs, *The United Nations Disarmament Yearbook*, Vol. 10, 1985, New York, United Nations, 1986, p. 537

List of Parties**South Pacific Nuclear Free Zone Treaty
(as of 31 July 1990)**

Australia	1986
Cook Islands	1985
Fiji	1985
Kiribati	1986
Nauru	1987
New Zealand	1986
Niue	1986
Papua New Guinea	1989
Samoa, Western	1986
Solomon Islands	1989
Tuvalu	1986
+ China (P2, P3: 1989); USSR (P2, P3: 1988)	

P means Protocol to the Treaty

Chapter 14

The Stockholm Document on Confidence- and Security-Building Measures and Disarmament in Europe (1986)

Henny J. van der Graaf

I - Introduction

HELSINKI FINAL ACT

The process of establishing confidence- and security-building measures (CSBMs) among the 35 States participating in the Conference on Security and Co-operation in Europe (CSCE) began with the signing of the Helsinki Final Act in 1975. The Final Act provided for a number of confidence-building measures under which States undertook to give one another prior notification on a voluntary basis of certain military activities by their land-based forces in Europe. If necessary, States could at their own discretion also invite observers from the other CSCE States.¹ Although the Helsinki Final Act did not provide for any explicit verification arrangements, it could be said with a certain degree of caution that it took the first tentative step towards an inspection regime for conventional arms control. The sixth edition of the Concise Oxford Dictionary defines the verb "to verify" as "to establish the truth or correctness of [something] by examination or demonstration". This being so, one might say that prior notification of certain military activities and the invitation of observers to be present during them can be seen as a readiness to *demonstrate* openly that a country's military activities do not constitute a threat to other CSCE countries. In the period 1975-1983, notification was given of nearly a hundred exercises under the terms of the Final Act, and observers were invited to be present at half of these. In general, compared with the Warsaw Pact countries Western, Neutral and Non-Aligned States provided a much more expansive range of on-site verification opportunities by inviting observers to twice as many of their exercises. Observers invited by Warsaw Pact States were generally not given adequate facilities to enable them to carry out their tasks effectively.²

The voluntary provision of specific military information in connection with prior notification, as provided for in the Final Act, implicitly made a modest contribution to the verification of the overall military situation of the country concerned. The

¹ Conference on Security and Co-operation in Europe, Final Act, Helsinki, 1975, Document on Confidence-Building Measures and Certain Aspects of Security and Disarmament.

² Bernd A. Goetze, *Verification of Confidence- and Security-Building Measures: Evolution and Future Prospects, Verification of Arms Reductions*, edited by Almann, J. and Rotblat, J., Springer Verlag, pp. 140-142.

discussions concerning compliance with the Final Act at the CSCE follow-up meetings can also be said to perform a certain control function.

However, the voluntary character of the Helsinki Confidence-Building Measures and the absence of real substantive verification provisions in the Final Act made them unreliable as indicators of a country's intentions in times of tension or crisis. A good example is the Soviet Union's notification of the manoeuvre ZAPAD-81, near the Polish border during the Polish crisis in September 1981. This manoeuvre was not properly announced; observers were not invited, and information was not made available about the number of troops taking part.

CDE-STOCKHOLM

At the CSCE follow-up meeting in Madrid (1981-1983), the CSCE States agreed to open new negotiations to expand the confidence-building measures agreed at Helsinki.³ These negotiations, which are known as the Conference on Confidence- and Security-Building Measures and Disarmament in Europe (CDE), resulted in the Stockholm document of September 1986, which comprised the following *politically binding* measures. The CSCE countries undertook to give notification in advance, in an annual calendar, of all military exercises and troop concentrations in Europe involving at least 13,000 troops or 300 tanks (and amphibious landings and parachute assault exercises involving at least 3,000 troops), and to give further, more detailed, notification 42 days in advance of the start of the activities. They agreed not to carry out any further military activities involving more than 75,000 troops unless these had been announced two years in advance, and not to carry out military manoeuvres involving more than 40,000 troops unless they were included in the annual calendar. Observers from all CSCE States must be invited to attend exercises involving more than 17,000 troops (or more than 5,000 in the case of amphibious landings or parachute assault exercises). If a country carries out military activities which give rise to suspicion that they may not be in accordance with the document, the other countries have the right to carry out an inspection on that country's territory, on the ground and/or from the air. The latter point represented a major breakthrough: this was the first arms control agreement in which the Soviet Union consented to an inspection of military activities on its territory without a right of refusal.⁴ More than a mere step towards the Western position on verification, this change can be seen as the consequence of new thinking about security based on the recognition of growing international interdependence, as well as the need for mutual security which includes the establishment of reliable means of verification.⁵

³ Concluding Document of the Madrid meeting, 1983.

⁴ Document of the Stockholm Conference on Confidence- and Security-Building Measures and Disarmament in Europe, Stockholm, 1986.

⁵ For a detailed analysis of the Soviet position on verification, see William C. Potter with Leonid V. Belyaev and Mark Lay, "The Evolution of Soviet Attitudes towards On-Site Inspections", in Lewis A. Dunn and Amy E. Gordon (eds.), *Arms Control Verification and the New Role of On-Site Inspection, Challenges, Issues and Realities*, Lexington Books, Massachusetts/Toronto, 1989, pp. 185-206.

Since the document entered into force, 117 exercises have been notified in advance, observers have been invited on 50 occasions and 40 inspections have taken place (as of June 1990). The Neutral and Non-Aligned countries (NNAs) have so far not participated in any inspection; nor have any inspections been carried out on their territory.

STOCKHOLM VERIFICATION SYSTEM

The Stockholm document is the first multilateral agreement to provide for explicit verification arrangements with regard to the activities of conventional forces. It contains both demonstrative elements (such as the provision of relevant information about military activities covered by the document and inviting observers to be present during such activities), and a monitoring element in the form of a detailed on-site inspection regime. The chapter on verification is almost entirely devoted to on-site inspections. Its provisions may be summarized as follows. Each participating State has the right to carry out inspections if it suspects that an exercise about which notification has been given is not being carried out in accordance with the description provided, or if military activities which should have been notified are taking place in another State. Inspections may be performed on the ground or from the air, or both. No more than four inspectors are permitted per team; they may divide into two groups, which may remain in communication with each other. The State being inspected generally provides vehicles and aircraft. No State is obliged to permit more than three inspections per year, or more than one inspection by the same State. Allies are not to inspect one another. The State which requests an inspection must give its reasons for doing so, but the State to which the request is addressed cannot refuse to allow the inspection. Permission must be given within 24 hours; the inspection team may begin the inspection in the specified area within 36 hours. Certain areas cannot be inspected; nor can defence installations, warships or military vehicles and aircraft. The document contains details of the rights of inspectors. (For an overview of all the provisions, see the annex below). Although the verification regime forms part of a multilateral agreement, it is to be implemented bilaterally. There are no institutionalized multilateral consultation procedures. Moreover, verification applies primarily to suspect military *activities*.

VIENNA NEGOTIATIONS

In light of the initial favourable experience of the implementation of the document, it was decided at the third CSCE follow-up meeting in Vienna that further negotiations should be held on CSBMs; these began on 9 March 1989, with the aim of "build[ing] upon and expand[ing] the agreements reached in the Stockholm CDE negotiation". On the same date and also within the framework of the CSCE process, separate negotiations began between NATO and the Warsaw Pact countries on conventional armed forces in Europe (CFE). Although the ultimate aim of both sets of negotiations

is to increase security and stability, their immediate objectives are different. The negotiations on CSBMs will be concerned mainly with openness about the military situation in Europe and ensuring that it is predictable, whereas CFE is primarily intended to eliminate conventional imbalances, achieve parity at lower levels of forces and armaments, and eliminate the capacity for surprise attacks and major offensives.⁶

RELATIONSHIP/INTERACTION BETWEEN CSBMS AND CONVENTIONAL ARMS CONTROL/DISARMAMENT

There is an obvious link between CSBMs and conventional arms control and disarmament. Firstly, CSBMs promote transparency and openness, primarily with a view to reducing the danger of countries misunderstanding one another's intentions, as a result of which an armed conflict could break out accidentally. Moreover, CSBMs often constitute a logical complement to reductions in conventional forces by laying down guidelines on the activities of those forces which remain after the reductions. In the future it will become increasingly difficult to distinguish between CSBMs agreed between the 35 CSCE countries and those developed within the framework of the CFE negotiations as stabilizing measures. Separate verification arrangements, each operating independently within the same area from the Atlantic Ocean to the Urals, can only lead to confusion. CSBMs and conventional arms control/disarmament should therefore be the warp and weft of a single common, co-operative security concept. Considering this integration of CSBMs and disarmament measures in a single security concept, it would seem logical for the verification arrangements of both also to be combined. This could mean establishing one system in Europe to verify compliance both with a CFE agreement and with the CSBM agreements.

THE AIM OF THE STUDY

The aim of this study is to examine the verification provisions of the Stockholm document to ascertain how they are operating in practice, what possible improvements could be made to them and in what way they are relevant to future agreements on CSBMs and on reducing conventional forces in Europe.

II - Analysis

In analysing the verification provisions of the Stockholm document, particular consideration will be given to the following points:

- the comprehensiveness of the Stockholm verification regime;
- the adequacy of the system;
- exchanges of information;

⁶ Concluding Document of the Vienna meeting, 1986.

- the use of national technical means (NTMs);
- the trigger mechanism for inspections;
- the quota system;
- restrictions;
- visiting rights, and
- arrangements for consultation and communication.

Where possible, the above elements will be considered in terms of the relevant provisions of the Stockholm document.

COMPREHENSIVENESS

Generally speaking, an adequate verification regime for conventional forces must consist of the following:

- a definition of the aim of the regime;
- machinery for exchanging information;
- machinery for remote monitoring;
- various forms of on-site inspection;
- consultative arrangements.

The provisions concerning verification in the chapter on "Compliance and Verification" in the Stockholm document are almost entirely concerned with on-site inspections. It is not specified what the system should be capable of achieving, and no arrangements at all are made for exchanges of information for verification purposes. Nor is there any provision for an institutionalized consultative procedure.

THE ADEQUACY OF THE SYSTEM

Para. 63 of the Stockholm document states:

According to the Madrid Mandate, the confidence and security building measures to be agreed upon "will be provided with adequate forms of verification which correspond to their content".

The concept of adequacy was debated at length during the negotiations. The Western countries took the view that adequate verification required a technically sound, non-discriminatory verification system "which provides for both aerial and ground inspection and the availability of accurate and timely information. The right to check compliance must exist *a priori* without any requirement to enter into consultations concerning the need for inspections".

The Eastern Europeans said that the definition of adequate verification was necessarily a political question which had to be judged in the perspective of the security situation of each participating State. Moreover, the concept of adequacy

needed to be defined separately for each of the agreed measures.⁷ In specific terms, this meant that the verification arrangements for each CSBM would have to be considered by a multilateral verification organization.

The Non-Aligned and Neutral countries said that the concept of adequacy should be interpreted in such a way that each State could "safeguard its national security within the framework of the regime even in a crisis situation", depending on its own resources.⁸

The discussion did not produce any operational solution, and in any case was intended primarily to indicate the frame of reference of the three camps (East, West and NNAs). In the end, the Madrid Mandate was simply repeated literally.

EXCHANGES OF INFORMATION

In a verification regime, there is a inverse relationship between the amount of information exchanged (and the amount of detail provided) and the necessity for on-site inspections. The more detailed the information provided, the fewer the number of inspections required.

The Stockholm document does not contain any explicit provisions concerning exchanges of information for the sole purpose of the verification regime. Countries are obliged to supply information only in the context of notifiable military activities. The Western countries and some of the NNAs wished to strengthen the verification regime by eliciting demonstrative periodic exchanges of information about military headquarters, units and weapon systems, in the form of a separate CSBM. The idea was that greater openness with regard to military structures would not only promote confidence, but also assist verification of compliance with the document. However, the idea was thwarted by reluctance on the part of the Soviet Union to reveal details of its military posture. It was afraid that the West was only seeking to institutionalize a form of legalized spying. In practice, it has also become clear during inspections that the non-existence of a data bank is a major obstacle to estimating numbers of troops and material.

However, it seems likely that by the time future agreements are concluded, there will be greater understanding among the Parties regarding the fact that detailed exchanges of information are a condition *sine qua non* for an effective regime. This has already been recognized in the mandate for the CFE negotiations, which states that:

Compliance with the provisions of any agreement shall be verified through effective and strict verification which, among other things, will include on-site inspections as a matter

⁷ Istváb Körmeny, "Symposium on Verification and Disarmament in Europe", The Swedish National Defence Research Institute (FOA), *FOA Report*, No. A-20036-T3, Norstedts Tryckeri, Stockholm, 1985, p. 52.

⁸ Johan Tunberger, "Symposium on Verification and Disarmament in Europe", The Swedish National Defence Research Institute (FOA), *FOA Report*, No. A-20036-T3, Norstedts Tryckeri, Stockholm, 1985, p. 146.

of right and exchange of information. Information shall be exchanged in sufficient detail so as to allow a meaningful comparison of the capabilities of the forces involved. Information shall also be exchanged in sufficient detail so as to provide a basis for the verification of compliance. The specific modalities for verification and the exchange of information, including the degree of detail of the information and the order of its exchange, shall be agreed at the negotiations proper.

In view of the relatively limited number of military activities concerning which information must be exchanged, the CSBM regime provided for under the Stockholm document still permits this information to be exchanged bilaterally.

In future agreements on the subject - particularly if viewed in conjunction with reductions in conventional forces in Europe - information will have to be exchanged periodically in significant quantities; thus it will be unduly complicated for the States concerned to continue to inform one another bilaterally. Moreover, if individual States compare this data with that gathered through national technical means, they may find discrepancies, because not all the participating States have the same level of sophistication in data collection. Therefore, the comparison and analysis should be done by a specialized body. Because of the sensitivity of the process it should not be a collective East/West undertaking for the time being, but rather a special body for each group of States. All participating States should adopt a so-called "non-language-dependent common accounting system" which can be easily computerized. It should feed the databank from which assessments can be made as to whether, on paper, a country is faithfully complying with the agreement. Samples taken from these data could be subject to challenge by on-site inspection. The data accounting system of the International Atomic Energy Agency (IAEA) in Vienna could serve as a model.⁹

THE USE OF NATIONAL TECHNICAL MEANS

Para. 64 of the Stockholm document states:

The participating States recognize that national technical means can play a role in monitoring compliance with agreed confidence- and security-building measures.

This clause differs significantly from the standard formula used in bilateral US/Soviet arms control agreements. Initially, the West had proposed the classic formula, namely: "Each participating State would use available national technical means of verification in a manner consistent with generally recognized principles of international law".

During the negotiations, Switzerland and a number of other NNA countries argued strongly that the clause on NTMs should be excluded from the document because to stipulate such means would be discriminatory towards the many CSCE countries which lacked them. In particular, it would also erode the basic principle of the sovereign equality of the CSCE States. Eventually, it was reluctantly agreed that the above

⁹ IAEA publication SG/INF/3, Vienna, 1981, pp. 20-23.

relatively meaningless formula should be employed, although this does insufficient justice to the importance which should be attached to NTMs.

NTMs are means in the possession of individual States which can be used continuously to observe the military situation and capabilities of potential adversaries. These primarily consist of satellites and aircraft equipped with imaging and/or electronic interception equipment, and ships and ground stations with radio/radar interception equipment. However, military missions, military attaches, literature and media research could also fall under the same heading. It is not known to what extent NTMs have played a role in verifying the Stockholm document to date. The USA and the Soviet Union have not supplied any information on the subject to other CSCE countries. Nonetheless, it is still possible to claim that in practice NTMs are of great importance in monitoring military activities and installations on the mainland of Europe from the Atlantic to the Urals.

Particularly if the verification regimes for CSBMs and for conventional disarmament were to be combined, and if the countries which possess NTMs still cannot be persuaded to share the information obtained by those means with other CSCE countries, consideration should be given to the possibility of establishing a European satellite system to carry out permanent observations for the verification of future agreements.

In this connection, it is probably too soon to start working towards the establishment of an all-European system in which all European countries would participate from the very beginning. The rapidly changing situation in Europe makes it unrealistic to consider separate Western and Eastern satellite systems closely tied to outdated alliances. A future European satellite system should be open for participation to all interested European States. To overcome the problems of mission control, data analysis and data dissemination, such an organization would have to have a considerable degree of independence. Otherwise, smooth operations could be hampered by continuous disputes between participants.

Until such time, for the next decade or so, countries will have to rely on aircraft for routine and "challenge" aerial observation of sensitive areas or spot surveillance. The Stockholm document permits the use of aircraft with the proviso that only hand-held cameras may be used. In the future, it would be desirable to use aircraft equipped with SAR (synthetic aperture radar) and built-in (CCD) cameras. If multilaterally organized, four or five aircraft on both sides would be sufficient for routine observation of military objects and pre-notified military activities in the most sensitive areas.¹⁰

Further research is needed in order to ascertain whether the use of a number of aircraft for permanent observation over Europe would not be a better and more cost-effective option than a European satellite system. In a recent study on satellite surveillance, Hartwig Spitzer stated a preference for aircraft rather than satellites for the permanent observation of certain areas under European conditions.¹¹ However,

¹⁰ Weu, AG 1 (89) D/14, April 1989.

¹¹ Hartwig Spitzer, S+F Vierteljahresschrift für Sicherheit und Frieden, Jahrgang 7, Heft 2, 1989, p. 87.

account needs to be taken of the fact that the use of aircraft (instead of satellites) is dependent on co-operation, which would not be guaranteed in a crisis.

THE TRIGGER MECHANISM

Para. 65 of the Stockholm document:

In accordance with the provisions contained in this document each participating State has the right to conduct inspections on the territory of any other participating State within the zone of application for CSBMs.

Para. 66:

Any participating State will be allowed to address a request for inspection to another participating State on whose territory, within the zone of application for CSBMs, compliance with the agreed confidence- and security-building measures is in doubt.

Para. 70:

The participating State which requests an inspection will state the reasons for such a request.

Para. 72:

Any possible dispute as to the validity of the reasons for a request will not prevent or delay the conduct of an inspection.

The aim of these paragraphs is to assert the right to conduct inspections fully and promptly. The West did not consider it necessary to specify the nature of the doubts regarding compliance with the document. However, some countries, notably including a number of NNA countries, considered that such an open-ended Statement went too far, as the mention of "doubts" introduced an element of suspicion which they regarded as contrary to the spirit of an agreement whose whole purpose was to improve confidence between States. At the insistence of the NNA countries, therefore, a clause was inserted stating that the reasons for requesting an inspection must be stated. NNA countries were also afraid that if the doubts concerning compliance were not specified, requests for inspections would be submitted too readily.

In practice, they have been proved right. The first request for an inspection on the territory of the Soviet Union submitted by the US did not specify any grounds for doubt, it referred only to paragraph 66. This practice was immediately adopted by the Soviet Union and virtually every other country as well.

During the negotiations in Stockholm, Western negotiators stressed that the inspection regime should be organized so as to discourage non-compliance; in effect, to act as a deterrent. In practice, though, it has turned into a purely routine confidence-building measure, which reduces its ability to assist hard factfinding. A

number of participating States are willing to acquiesce in this change of course, because in their view this will better accustom States to the system, which could pave the way for its possible application in a crisis. They also believe that it enables practical experience to be gained with a view to possible future improvements in the system.

This may be true, but it has led to the curious situation that the vast majority of inspections conducted so far have not been requested on account of doubts about compliance but because countries wished to use up the quota available.

It is too early to say, whether this is a positive development. Whether the system would work if the international climate were to deteriorate also remains to be seen. Whatever approach one adopts, there is much to be said for stating more clearly the grounds for requesting an inspection, in order to avoid inspections being sudden and arbitrary.

THE QUOTA SYSTEM

Para. 67 of the Stockholm document:

No participating State will be obliged to accept on its territory within the zone of application for CSBMs more than three inspections per calendar year.

Para. 68:

No participating State will be obliged to accept more than one inspection per calendar year from the same participating State.

Para. 69:

An inspection will not be counted if, due to *force majeure*, it cannot be carried out.

This "passive" quota system was the price which the West had to pay for acceptance by the Soviet Union of the right to conduct on-site inspections.

Initially, the West was in favour of a pure challenge inspection system, under which the only restriction would be on the number of inspections which a country was permitted to carry out on the territory of another State. The NNA countries initially opposed any type of restriction on the number of inspections permitted, as this would create opportunities for circumvention. For example, one Party could deliberately foster doubts in the mind of another concerning compliance with the agreement, thus tempting it to use up the inspection quota prematurely and giving the first Party a free hand for the rest of the year. It was also feared that Members of the same alliance would inspect one another in order to exhaust the passive quota. However, the latter problem was solved by interpretative declarations in which this possibility was expressly excluded.

The quota system works well in practice and has not given rise to any friction. Admittedly it has helped to bring about a fundamental change in the character of the inspection regime, from a challenge to a routine system, effectively making this an additional confidence-building measure rather than a means of preventing non-compliance.

SPECIFIED AND RESTRICTED AREAS

Para. 73 of the Stockholm document:

The participating State which requests an inspection will be permitted to designate for inspection on the territory of another State within the zone of application for CSBMs a specific area. Such an area will be referred to as the "specified area". The specified area will comprise terrain where notifiable activities are conducted or where another participating State believes a notifiable military activity is taking place. The specified area will be defined and limited by the scope and scale of notifiable military activities but will not exceed that required for an army level military activity.

Para. 74:

In the specified area, the representatives of the inspecting State accompanied by the representatives of the receiving State will be permitted access, entry and unobstructed survey, except for areas or sensitive points to which access is normally denied or restricted, military and other defence installations, as well as naval vessels, military vehicles and aircraft. The number and extent of the restricted areas should be as limited as possible. Areas where notifiable military activities can take place will not be declared restricted areas, except for certain permanent or temporary military installations which, in territorial terms, should be as small as possible, and consequently those areas will not be used to prevent inspection of notifiable military activities. Restricted areas will not be employed in a way inconsistent with the agreed provisions on inspection.

A *specified area* must not be larger than that required for an army-level military activity. At Stockholm it was not possible to reach agreement on the size of such an area. The Soviet Union proposed about 150 km x 50 km (7,500 sq km), while the West's views were based on existing corps being equivalent in size to a Soviet army and able to extend over an area of up to 20,000 sq km. As it proved impossible to agree on the number of square kilometres, a vaguer description inevitably had to be chosen, but to date this has not caused any problems in practice.

Negotiations on the wording relating to *restricted areas* took a long time to complete. Initially, the West wanted a list of sensitive points to be included in the annual calendar, but in practice it was impossible to reach agreement on an exhaustive listing of these areas. Sweden and Switzerland wanted exercises in their permanent military and defence installations to be specially exempted, as inspection of these

would reveal their defence plans.¹² Although, the result of the negotiations was a fairly broadly formulated text, it has not caused many problems in practice to date. Of course, it should be borne in mind that the verification regime has so far operated in a climate of detente. How it would operate in a crisis remains to be seen. In such an eventuality, restricted areas could be used to evade the terms of the document, for example by designating military headquarters as restricted areas, which could conceal the true nature of a military activity.

VISITING RIGHTS

Para. 76 of the Stockholm document:

Inspection will be permitted on the ground, from the air, or both.

Para. 84:

There will be no more than four inspectors in an inspection team. While conducting the inspection, the inspection team may divide into two parts.

Para. 89:

The inspecting State will specify whether aerial inspection will be conducted using an airplane, a helicopter or both. Aircraft for inspection will be chosen by mutual agreement between the inspecting and receiving States. Aircraft will be chosen which provide the inspection team with a continuous view of ground during the inspection.

Para. 93:

The receiving State will provide for inspection purposes land vehicles with cross country capability. Whenever mutually agreed, taking into account the specific geography relating to the area to be inspected, the inspecting State will be permitted to use its own vehicles.

In effect, the Stockholm document provides for two types of visiting rights:

1. The obligation to invite observers to attend notified military activities;
2. The right to conduct on-site inspections.

In the case of the former, the initiative lies with the country holding the exercise, and it is only the particular exercise which is observed; thus, the measure is confined to a specific activity. The aim is "to confirm that the notified activity is not threatening in character and that it is carried out in conformity with the appropriate provisions of the notification".

¹² Joseph Schärerli, in *Verification of Confidence- and Security-Building Measures*, UNIDIR Conference 23-25 January 1989, Geneva.

On-site inspections, on the other hand, need not be confined solely to a particular military activity; they can also be linked to an area. Thus their aim is wider. Although the Stockholm document does not explicitly state the objective, it could be defined as follows: "To monitor compliance with agreed confidence- and security-building measures as well as to monitor suspected military activities in the field within the area of application". Another way of describing the difference would be to say that observation is a guided tour under the direction of the host State, whereas on-site inspections allow more intrusive freedom of movement.

The *observation* system is operating satisfactorily, although practice has shown that the selection of different thresholds for the invitation of observers and for the notification of the military activity concerned (17,000 as against 13,000 troops) is not ideal. The grey zone between the two now causes confusion and gives rise to unnecessary requests for inspections. In future it would be sensible to opt for the same threshold for both activities (namely the lower threshold).

Observers have also found it impossible to check statements on the number of troops taking part in an exercise. It would therefore be helpful to extend the observation period, to give the observers greater freedom in deciding on their observation programme, and, in addition to laying down a numerical parameter, to impose an obligation to enable the number of brigades/regiments or battalions taking part in the military activity to be checked by means of sampling.

In practice, the *on-site inspection regime* is operating satisfactorily, particularly as far as the political dimension is concerned. States which have held or hosted inspections have generally adhered to both the letter and the spirit of its provisions. Disputes about alleged violations as regards the number of troops taking part, deviations from the notified exercise area, inadequate means of communication etc. have generally been resolved through bilateral consultations. Here too, however, practice has shown that it is not possible to verify the number of troops and the amount of material within the short time available for an inspection. Periodic exchanges of data would also significantly ease the inspectors' task.

The provision of transport for inspectors also works well in practice. Agreement on the use of aircraft as part of the inspection regime was reached only towards the end of the negotiations, although the Soviet Union continued to object strongly to the use of foreign aircraft over its territory. This led the West to suggest that aircraft from NNA countries be used. This immediately aroused the interest of Sweden which offered, jointly with Austria, Finland and Switzerland, "to ensure the permanent availability, on the basis of rotation, of an adequate aircraft with crew". However, this compromise proposal was immediately rejected by the Soviet Union to the relief of some Western countries which, in fact, had only paid lip service to the idea in a spirit of alliance solidarity.

Lastly, paragraph 89 was so worded as not formally to exclude the use of foreign aircraft, but to make this dependent on the consent of the country being inspected. The

US observed that it would raise the question again in future negotiations.¹³ Perhaps President Bush's proposal of May 1989 concerning mutual aerial inspections was inspired by this.¹⁴ The Soviet Union has since announced that in future it will regard permanent monitoring of certain sensitive areas by means of aerial reconnaissance as an important element in verification.¹⁵

As noted above, on-site inspection operates satisfactorily in practice. The provisions will not need to be amended substantially for new CSBMs. At most, the number of inspections which a country must permit each year could be increased and the response times reduced. Of course if a future verification regime were also required to monitor compliance with an agreement on reductions in conventional forces, then substantial changes would have to be made.

Some Western countries are very hesitant about the idea of an institutionalized multilateral verification system. The CSBM proposals which have been tabled by the West in Vienna¹⁶ emphasize again that the Western countries favour separate bilateral verification arrangements. For example, the West envisages a third type of visiting rights whose purpose would be to check the information supplied each year regarding the military capabilities of the CSCE countries; these rights would involve regular trips to military facilities to evaluate and count the equipment stationed there. Such proposals, could mean several hundred additional bilateral inspections per year within the CSCE area - without any form of institutionalized organization.

An approach along these lines does not seem particularly worthwhile. It would involve a variety of arms control inspection teams operating more or less in isolation from one another. The existence of various systems operating in parallel should be avoided, as this can only lead to a lack of clarity and to wastage of manpower and resources. Accordingly, the main aim of research must be to ascertain to what extent the existing system can be expanded into a multilateral verification system for the total process of conventional arms control.

For the purpose of verifying compliance with the CSBM agreements, the main instrument should be a system of surprise inspections in accordance with the current system. It should also be possible to carry out surprise inspections if doubts or disagreements arise concerning the military data exchanged each year under the terms of the agreements on CSBMs and reductions in conventional forces. If conventional forces are reduced, permanent inspection teams will have to verify the withdrawal and/or dismantling of weapon systems and units on-site during the reduction phase, which will take several years to complete. In the post-reduction phase, the whole

¹³ The US delegation at the Stockholm Conference stated publicly that the question should be raised again in future negotiations.

¹⁴ Open Skies Initiative announced by US President Bush, 12 May 1989, at College Station, Texas. Open Skies would allow unarmed aircraft from interested NATO and WP nations to overfly one another's territory to encourage reciprocal openness and confidence-building.

¹⁵ See also E. Shevardnadze's address to the Ministerial meeting in Vienna, 6 March 1989.

¹⁶ Proposal WV-1 by NATO members submitted to the CSBM talks in Vienna, July 1989.

verification system will be very important, as regards both monitoring and the analysis of data obtained.

In the area of application from the Atlantic to the Urals, provision will have to be made for dealing with about two thousand military garrisons and air bases (at a rough estimate) and several thousand arms depots and military installations, over and above inspections of military activities subject to the notification regime. It seems an obvious conclusion that these locations can only be monitored by means of a system of surprise inspections at a number of random locations. At this stage, routine inspections can only be arranged for limited purposes, at most. It might be possible, for example, to station mobile inspection teams permanently in the most sensitive regions,¹⁷ attach inspectors to the staffs of large units, man monitoring/control posts at the periphery of certain zones or of the area of application, monitor both declared major weapon depots and plants producing weapon systems subject to the agreement.

The number of inspections which individual countries will have to permit on their territory each year will depend on the number of military locations and activities in the country. The precise number can be decided only once the initial exchange of data has clarified the military situation of the country concerned.

The extent to which technical aids can take over or facilitate inspectors' tasks will have to be investigated. Examples include optical and electronic systems for monitoring border areas, depots and production plants; sealing of material at storage depots, and marking the remaining weapon systems with unique, unremovable tags. It will also be necessary to ascertain whether the cost of such schemes will be outweighed by the benefits.

Under the terms of the INF Treaty, the United States has a monitoring system designed by a private company, which is also operating the system on site, to check on the production plant at Votkinsk (USSR) where the SS-20 and other weapon systems were produced. In addition to 6 American inspectors, 24 employees are permanently stationed there for this purpose. The costs of installing the system amounted to between 10 and 15 million dollars. It does not take much arithmetic to conclude that it would not be a practical proposition to apply a system of this kind on a large scale within the framework of agreements on conventional arms control.

CONSULTATION/COMMUNICATION ARRANGEMENTS

Para. 95 of the Stockholm document:

The inspecting State will prepare a report of its inspection and will provide a copy of that report to all participating States without delay.

¹⁷ This is not a new idea. In 1958 during the Geneva Surprise Attack Conference the Americans suggested mobile inspection teams for the monitoring of military installations. A lot of experience can also be gained from the 1947 agreement on military liaison missions in the two Germanies: the Soviets in the FRG and the Americans, British and French in the GDR.

Para. 97:

Diplomatic channels will be used for communications concerning compliance and verification.

Para. 98:

Each participating State will be entitled to obtain timely clarification from any other participating State concerning the application of agreed confidence- and security-building measures. Communications in this context will, if appropriate, be transmitted to all other participating States.

The Stockholm inspection regime was agreed multilaterally but is implemented bilaterally. It does not provide for any institutionalized consultations.

During the negotiations there was opposition, mainly from NATO countries, to any form of consultation mechanism; as they feared that this would pave the way for an institutionalized European security system with a "*droit de regard*" vis-à-vis Western European defence efforts. NATO countries also feared that on-site inspections would lead to multilateral disputes. They were therefore not in favour of letting inspection reports be discussed by all 35 countries at consultations established for verification purposes. The East, supported by the NNA countries, argued in favour of a multilateral consultation mechanism, for example in the form of a "*salon des ambassadeurs*" as advocated by the Swiss. But in the face of Western reluctance and a lack of time, these proposals came to nothing. Ultimately, agreement was reached on the formula in paragraph 98, which commits nobody to anything.

In practice, it has since become clear that there is a need for institutionalized consultations. The first two years of implementation of the Stockholm document happened to coincide with the third CSCE follow-up meeting, so that it was possible to circulate information about the inspections which had just been carried out. Virtually every inspection led to requests for further information, notably on the part of the NNA countries, which constantly complained that the inspecting countries did not give their reasons for requesting the inspections and that they submitted their reports far too late.

As suggested above, it would be a positive step forward if an integrated verification system could be set up for present and future agreements about both CSBMs and conventional reductions and if this system could be institutionalized multilaterally. It is clearly undesirable for a few large countries to dominate the verification process just because they have the necessary technical capability.

As the CFE negotiations are also taking place in the framework of the CSCE, there would be advantages in establishing such an organization in this framework. This would reflect the CSCE's umbrella function with regard to European security, and thus involve the NNA countries in the verification process as well. For example, it might be possible to set up a CSCE verification committee on which all 35 CSCE States would be represented and which would be responsible for monitoring

compliance with the relevant agreements and supervising its subordinate bodies; these would have responsibility for collecting and processing the relevant military data (data bank), co-ordinating inspections, procuring and administering technical equipment, etc.

However, there are both multilateral and bilateral aspects to agreements on conventional arms control in Europe, and the bilateral aspect has been the stronger to date. Moreover, two thirds of the CSCE States still belong to military alliances. While the latter, at least on the Western side, will continue to have a co-ordinating function with respect to arms control and disarmament, it would be practical to have a co-ordinating verification body for each group of States. The changing situation in Eastern Europe implies that it is not very sensible to expect that the Warsaw Pact Treaty Organization will survive as a coherent political/military organization. At most, its political structure may remain in force for the time being. It does not seem realistic to make or to define choices for structural solutions right now. For the time being verification should be organized as flexibly as possible, relying on existing structures. Therefore, it is hoped that in the transition period towards a new security system in Europe both former alliances will continue to play a concerted role in arms control and verification. However in the light of recent developments, the verification task should not be fully integrated in the alliances' bureaucracies but organized in such a way that it can be easily transformed into an all-European security and crisis management system, when the time is right. Even if such a co-ordinating function of the Warsaw Pact is no longer conceivable, it would be preferable that interested East European countries set up a verification co-ordinating body of their own. As far as the West is concerned, the extent to which WEU, with its experience of inspections, could play a role in verifying conventional arms control agreements in Europe should be studied.

The only indicator of the costs of such a multilateral verification organization is IAEA. It monitors some 900 nuclear installations world-wide, for which purpose it employs approximately 200 inspectors and a support staff of 300, with a budget in the region of \$50 million per annum.¹⁸

A recent WEU study¹⁹ estimated the cost of a Western European verification agency (excluding the cost of a European satellite system) at \$500 million for initial investments and \$175 million per annum in operating costs. This would pay for an organization employing some 1,500 people: 500 in the field and 1,000 at the secretariat. This organization would be equipped to conduct about 250 surprise inspections at random each year (at 10 per cent of the military installations), to man 20 Exit/Entry Points with 20 staff each, 80 two-man Observation Posts and approximately 200 Perimeter Control Systems (at depots and production plants).

¹⁸ IAEA document GC (XXXIII)/873.

¹⁹ WEU, AG 1(89) D/14, April 1989, estimated costs of a verification system for a conventional arms control agreement in Europe.

III - Summary of Conclusions

1. CSBMs and conventional arms control/disarmament are elements in a single common co-operative security concept and therefore demand a common, structured verification mechanism.
2. The inspection regime laid down in the Stockholm document is operating satisfactorily, although improvements could be made, notably as regards the number of inspections which a country should permit each year, the description of the reasons for requesting an inspection, and reducing response times. The extent to which the existing system could be expanded into a multilateral verification system for the whole process of conventional arms control/disarmament should be studied.
3. The various thresholds for notification and the invitation of observers laid down in the Stockholm document should be abolished, and a common threshold established above which notification should be given and observers invited.
4. Demonstrative periodic exchanges of data about military headquarters, units and weapon systems are a necessary precondition for an effective verification system. Future agreements will render the data flow so heavy that special bodies will need to be given responsibility for its collecting and processing.
5. An effort will have to be made to establish a European satellite observation capacity for the purpose of permanent monitoring of compliance with future agreements. Until such a capacity has been established, aircraft should be used to carry out continuous observation. Research should be undertaken to ascertain whether continuous monitoring by means of aircraft equipped with SAR and CCD cameras might not be better and more cost-effective in European conditions.
6. The "umbrella" function of the CSCE for European security should be confirmed by setting up an institutionalized consultative body to monitor compliance with the agreements concerned. In addition to this, separate verification bodies should initially be established for the East and the West to collect and process the relevant military data, to organize inspections, procure and administer technical equipment, etc.

IV - Final Remarks

Experience of the verification provisions of the Stockholm document has been satisfactory to date, although the inspection regime has so far operated in a favourable political climate. In future the system, which at present only comprises arrangements for on-site inspections, will have to be expanded to create a full regime in which all the elements, from monitoring and data handling to multilateral consultation arrangements, are organized. It would be undesirable for separate verification arrangements to be made for each of the various agreements on CSBMs and conventional arms control and disarmament. The ultimate aim must be to agree on an institutionalized multilateral verification arrangement under CSCE control. For the

near future solutions should be as flexible as possible using the existing structures of the two alliances.

More and more attention is being given to the prospect of combining future negotiations on CSBMs and CFE into a single negotiation in which all CSCE States would participate on an equal footing. It is expected that the next CSCE follow-up meeting, which will convene in Helsinki in 1992, will take up this matter. If such a scenario is pursued, the time will be ripe to negotiate the above-mentioned all-European verification agency which, as much as possible and as much as feasible, will take over national responsibilities for verification.

Preceding the actual organization of such an agency one could imagine the formation of an "CSCE Inspectors' Association", which would conduct conferences, workshops, etc. in order for inspectors to familiarize themselves with each other and exchange experiences about implementation, thus creating better mutual understanding.²⁰

²⁰ A similar suggestion has been made by Don O. Stovall in "The Stockholm Accord, On-Site Inspection in Eastern and Western Europe", in Lewis A. Dunn and Amy E. Gordon (eds.), *Arms Control Verification and the New Role of On-Site Inspection*, Lexington Books, 1989, p. 27 and note 21.

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Table 1: Procedures related to the Final Document of the Stockholm Conference of 1986**Main Treaty Provisions and Monitoring and Verification Methods**

	Factfinding							Assessment procedures					
	0	1	2	3	4	5	6	7	8	9	10	11	12
Establishment of data base													
Limitation of use													
Limitation of deployment													
Limitation of testing													
Limitation of possession													
Limitation of production													
Limitation of transfer													
Prohibition of use													
Prohibition of deployment													
Prohibition of testing													
Prohibition of possession													
Prohibition of production													
Prohibition of transfer													
Destruction													

0 = No method; 1 = National Technical Means; 2 = Exchange of data; 3 = Consultation; 4 = Control Posts/Observation; 5 = On-site inspection on a State territory; 6 = On-site inspection on a non-State territory; 7 = IAEA Safeguards; 8 = Review Conference; 9 = Submission of report; 10 = Consultation; 11 = Referral to an international organization; 12 = Referral to the International Court of Justice.

For further explanation see also pages 332 and 32-34.

Explanatory note on Table 1

Apart from a reaffirmation of the principle of the non-use of force (paragraph 9-28), the Stockholm Document engages States to:

1. Notify certain military activities (paragraph 29-37)
2. Invite observers to certain military activities (paragraph 38-55)
3. Exchange annual calendars, which forecast notifiable activities for the following year (paragraph 55-58)
4. Prohibit certain military activities unless notified (paragraph 59-62).

Factfinding methods

Paragraphs 63 through 98 provide for verification of the engagements. Verification is done through NTM, exchange of information, observation and on-site inspection. The observation is linked to the notified military activities. The challenge on-site inspections are linked to an area. Henny van der Graaf defines their objective as follows: "To monitor compliance with agreed confidence- and security-building measures as well as suspected military activities in the field in the area of application."

Assessment procedures

The Stockholm document provides for submission of reports after an inspection (paragraph 95) and for bilateral consultation (paragraph 98).

The Relevant Treaty Articles

DOCUMENT OF THE STOCKHOLM CONFERENCE ON CONFIDENCE- AND SECURITY-BUILDING MEASURES AND DISARMAMENT IN EUROPE (19 SEPTEMBER 1986, STOCKHOLM)

(...)

PRIOR NOTIFICATION OF CERTAIN MILITARY ACTIVITIES

(29) The participating States will give notification in writing through diplomatic channels in an agreed form of content, to all other participating States 42 days or more in advance of the start of notifiable* military activities in the zone of application for confidence- and security-building measures (CSBMs). **

(30) Notification will be given by the participating State on whose territory the activity in question is planned to take place even if the forces of that State are not engaged in the activity or their strength is below the notifiable level. This will not relieve other participating States of their obligation to give notification, if their involvement in the planned military activity reaches the notifiable level.

(31) Each of the following military activities in the field conducted as a single activity in the zone of application for CSBMs at or above the levels defined below, will be notified:

(31.1) The engagement of formations of land forces*** of the participating States in the same exercise activity conducted a single operational command independently or in combination with any possible air or naval components.

(31.1.1) This military activity will be subject to notification whenever it involves at any time during the activity:

- at least 13,000 troops, including support troops, or
- at least 300 battle tanks

* In this document, the term notifiable means subject to notification.

** See Annex I.

*** In this context, the term land forces includes amphibious, airmobile and airborne forces.

if organized into a divisional structure or at least two brigades/regiments, not necessarily subordinate to the same division.

(31.1.2) The participation of air forces of the participating States will be included in the notification if it is foreseen that in the course of the activity 200 or more sorties by aircraft, excluding helicopters, will be flown.

(31.2) The engagement of military forces either in an amphibious landing or in a parachute assault by airborne forces in the zone of application for CSBMs.

(31.2.1) These military activities will be subject to notification whenever the amphibious landing involves at least 3,000 troops or whenever the parachute drop involves at least 3,000 troops.

(31.3) The engagement of formations of land forces of the participating States in a transfer from outside the zone of application for CSBMs to arrival points in the zone, or from inside the zone of application for CSBMs to points of concentration in the zone, to participate in a notifiable exercise activity or to be concentrated.

(31.3.1) The arrival or concentration of these forces will be subject to notification whenever it involves, at any time during the activity:

- at least 13,000 troops, including support troops, or
- at least 300 battle tanks

if organized into a divisional structure or at least two brigades/regiments, not necessarily subordinate to the same division.

(31.3.2) Forces which have been transferred into the zone will be subject to all provisions of agreed CSBMs when they depart their arrival points to participate in a notifiable exercise activity or to be concentrated within the zone of application for CSBMs.

(32) Notifiable military activities carried out without advance notice to the troops involved are exceptions to the requirement for prior notification to be made 42 days in advance.

(32.1) Notification of such activities, above the agreed thresholds, will be given at the time the troops involved commence such activities.

33) Notification will be given in writing of each notifiable military activity in the following agreed form:

34) A - General Information

- (34.1) The designation of the military activity;
- (34.2) The general purpose of the military activity;
- (34.3) The names of the States involved in the

military activity;

(34.4) The level of command, organizing and commanding the military activity;

(34.5) The start and end dates of the military activity.

(35) B - Information on different types of notifiable military activity.

(35.1) The engagement of formations of land forces of the participating States in the same exercise activity conducted under a single operational command independently or in combination with any possible air or naval components;

(35.1.1) The total number of troops taking part in the military activity (i.e., ground troops, amphibious troops, airmobile and airborne troops) and the number of troops participating for each State involved, if applicable;

(35.1.2) Number and type of divisions participating for each State;

(35.1.3) The total number of battle tanks for each State and the total number of anti-tank guided missile launchers mounted on armoured vehicles;

(35.1.4) The total number of artillery pieces and multiple rocket launchers (100 mm calibre or above);

(35.1.5) The total number of helicopters, by category;

(35.1.6) Envisaged number of sorties by aircraft, excluding helicopters;

(35.1.7) Purpose of air missions;

(35.1.8) Categories of aircraft involved;

(35.1.9) The level of command, organizing and commanding the air force participation;

(35.1.10) Naval ship-to-shore gunfire;

(35.1.11) Indication of other naval ship-to-shore support;

(35.1.12) The level of command, organizing and commanding the naval force participation.

(35.2) The engagement of military forces either in an amphibious landing or in a parachute assault by airborne forces in the zone of application for CSBMs;

(35.2.1) The total number of amphibious troops involved in notifiable amphibious landings, and/or the total number of airborne troops involved in notifiable parachute assaults;

(35.2.2) In the case of a notifiable amphibious landing, the point or points of embarkation, if in the zone of application for CSBMs.

(35.3) The engagement of formations of land forces of the participating States in a transfer from outside the zone of application for CSBMs to arrival points in the zone, or from inside the zone of application for CSBMs to points of concentration in the zone, to participate in a notifiable exercise activity or to be concentrated;

(35.3.1) The total number of troops transferred;

(36) C - The envisaged area and timeframe of the activity

(36.1) The area of the military activity delimited by geographic features together with geographic co-ordinates, as appropriate;

(36.2) The start and end dates of each phase (transfers, deployment, concentration of forces, active exercise phase, recovery phase) of activities in the zone of application for CSBMs of participating formations, the tactical purpose and corresponding geographical areas (delimited by geographical co-ordinates) for each phase;

(36.3) Brief description of each phase.

(37) D - Other information

(37.1) Changes, if any, in relation to information provided in the annual calendar regarding the activity;

(37.2) Relationship of the activity to other notifiable activities.

OBSERVATION OF CERTAIN MILITARY ACTIVITIES

(38) The participating States will invite observers from all other participating States to the following notifiable military activities:

(38.1) The engagement of formations of land forces* of the participating States in the same exercise activity conducted under a single operational command independently or in combination with any possible air or naval components.

(38.2) The engagement of military forces either in an amphibious landing or in a parachute assault by airborne forces in the zone of application for CSBMs.

(38.3) In the case of the engagement of formations of land forces of the participating States in a transfer from outside the zone of application for CSBMs to arrival points in the zone, or from inside the zone of application for CSBMs to points of concentration in the zone, to participate

* In this context, the term land forces includes amphibious, airmobile and airborne forces.

in a notifiable exercise activity or to be concentrated, the concentration of these forces. Forces which have been transferred into the zone will be subject to all provisions of agreed confidence- and security-building measures when they depart their arrival points to participate in a notifiable exercise activity or to be concentrated within the zone of application for CSBMs.

(38.4) The above-mentioned activities will be subject to observation whenever the number of troops engaged meets or exceeds 17,000 troops, except in the case of either an amphibious landing or a parachute assault by airborne forces, which will be subject to observation whenever the number of troops engaged meets or exceeds 5,000 troops.

(39) The host State will extend the invitations in writing through diplomatic channels to all other participating States at the time of notification. The host State will be the participating State on whose territory the notified activity will take place.

(40) The host State may delegate some of its responsibilities as host to another participating State engaged in the military activity on the territory of the host State. In such cases, the host State will specify the allocation of responsibilities in its invitation to observe the activity.

(41) Each participating State may send up to two observers to the military activity to be observed.

(42) The invited State may decide whether to send military and/or civilian observers, including members of its personnel accredited to the host State. Military observers will, normally, wear their uniforms and insignia while performing their tasks.

(43) Replies to the invitation will be given in writing not later than 21 days after the issue of the invitation.

(44) The participating States accepting an invitation will provide the names and ranks of their observers in their reply to the invitation. If the invitation is not accepted in time, it will be assumed that no observers will be sent.

(45) Together with the invitation the host State will provide a general observation programme, including the following information:

(45.1) - the date, time and place of assembly of observers;

(45.2) - planned duration of the observation

programme;

(45.3) - languages to be used in interpretation and/or translation;

(45.4) - arrangements for board, lodging and transportation of the observers;

(45.5) - arrangements for observation equipment which will be issued to the observers by the host State;

(45.6) - possible authorization by the host State of the use of special equipment that the observers may bring with them;

(45.7) - arrangements for special clothing to be issued to the observers because of weather or environmental factors.

(46) The observers may make requests with regard to the observation programme. The host State will, if possible, accede to them.

(47) The host State will determine a duration of observation which permits the observers to observe a notifiable military activity from the time that agreed thresholds for observation are met or exceeded until, for the last time during the activity, the thresholds for observation are no longer met.

(48) The host State will provide the observers with transportation to the area of the notified activity and back. This transportation will be provided from either the capital or another suitable location to be announced in the invitation, so that the observers are in position before the start of the observation programme.

(49) The invited State will cover the travel expenses for its observers to the capital, or another suitable location specified in the invitation, of the host State, and back.

(50) The observers will be provided equal treatment and offered equal opportunities to carry out their functions.

(51) The observers will be granted, during their mission, the privileges and immunities accorded to diplomatic agents in the Vienna Convention on Diplomatic Relations.

(52) The host State will not be required to permit observation of restricted locations, installations or defence sites.

(53) In order to allow the observers to confirm that the notified activity is non-threatening in character and that it is carried out in conformity with the appropriate provisions of the notification, the host State will:

(53.1) - at the commencement of the observation

programme give a briefing on the purpose, the basic situation, the phases of the activity and possible changes as compared with the notification, and provide the observers with a map of the area of the military activity with a scale of 1 to not more than 500,000 and an observation programme with a daily schedule as well as a sketch indicating the basic situation;

(53.2) - provide the observers with appropriate observation equipment; however, the observers will be allowed to use their personal binoculars, which will be subject to examination and approval by the host State;

(53.3) - in the course of the observation programme give the observers daily briefings with the help of maps on the various phases of the military activity and their development and inform the observers about their positions geographically; in the case of a land force activity conducted in combination with air or naval components, briefings will be given by representatives of these forces;

(53.4) - provide opportunities to observe directly forces of the State/States engaged in the military activity so that the observers get an impression of the flow of the activity; to this end, the observers will be given the opportunity to observe major combat units of the participating formations of a divisional or equivalent level and, whenever possible, to visit some units and communicate with commanders and troops; commanders or other senior personnel of participating formations as well as of the visited units will inform the observers of the mission of their respective units;

(53.5) - guide the observers in the area of the military activity; the observers will follow the instructions issued by the host State in accordance with the provisions set out in this document;

(53.6) - provide the observers with appropriate means of transportation in the area of the military activity;

(53.7) - provide the observers with opportunities for timely communication with their embassies or other official missions and consular posts; the host State is not obligated to cover the communication expense of the observers;

(53.8) - provide the observers with appropriate board and lodging in a location suitable for carrying out the observation programme and, when necessary, medical care.

(54) The participating States need not invite

observers to notifiable military activities which are carried out without advance notice to the troops involved unless these notifiable activities have a duration of more than 72 hours. The continuation of these activities beyond this time will be subject to observation while the agreed thresholds for observation are met or exceeded. The observation programme will follow as closely as practically possible all the provisions for observation set out in this document.

ANNUAL CALENDARS

(55) Each participating State will exchange, with all other participating States, an annual calendar of its military activities subject to prior notification*, within the zone of application for CSBMs, forecast for the subsequent calendar year. It will be transmitted every year, in writing, through diplomatic channels, not later than 15 November for the following year.

(56) Each participating State will list the above-mentioned activities chronologically and will provide information on each activity in accordance with the following model:

(56.1) - type of military activity and its designation;

(56.2) - general characteristics and purpose of the military activity;

(56.3) - States involved in the military activity;

(56.4) - area of the military activity, indicated by appropriate geographic features and/or defined by geographic co-ordinates;

(56.5) - planned duration of the military activity and the 14-day period, indicated by dates, within which it is envisaged to start;

(56.6) - the envisaged total number of troops* engaged in the military activity;

(56.7) - the types of armed forces involved in the military activity;

(56.8) - the envisaged level of command, under which the military activity will take place;

(56.9) - the number and type of divisions whose participation in the military activity is envisaged;

(56.10) - any additional information concerning, inter alia, components of armed forces, which the participating State planning the military activity considers relevant.

(57) Should changes regarding the military activities in the annual calendar prove necessary,

they will be communicated to all other participating States no later than in the appropriate notification.

(58) Information on military activities subject to prior notification not included in the annual calendar will be communicated to all participating States as soon as possible, in accordance with the model provided in the annual calendar.

CONSTRAINING PROVISIONS

(59) Each participating State will communicate, in writing, to all other participating States, by 15 November each year, information concerning military activities subject to prior notification* involving more than 40,000 troops*, which it plans to carry out in the second subsequent calendar year. Such communication will include preliminary information on each activity, as to its general purpose, time frame and duration, area, size and States involved.

(60) Participating States will not carry out military activities subject to prior notification involving more than 75,000 troops, unless they have been the object of communication as defined above.

(61) Participating States will not carry out military activities subject to prior notification involving more than 40,000 troops unless they have been included in the annual calendar, not later than 15 November each year.

(62) If military activities subject to prior notification are carried out in addition to those contained in the annual calendar, they should be as few as possible.

COMPLIANCE AND VERIFICATION

(63) According to the Madrid Mandate, the confidence and security building measures to be agreed upon "will be provided with adequate forms of verification which correspond to their content".

(64) The participating States recognize that national technical means can play a role in monitoring compliance with agreed confidence and security building measures.

(65) In accordance with the provisions contained in this document each participating State has the right to conduct inspections on the territory of any other participating State within the zone of application for CSBMs.

(66) Any participating State will be allowed to address a request for inspection to another participating State on whose territory, within the zone of application for CSBMs, compliance with the agreed confidence and security building measures is in doubt.

(67) No participating State will be obliged to accept on its territory within the zone of application for CSBMs, more than three inspections per calendar year.

(68) No participating State will be obliged to accept more than one inspection per calendar year from the same participating State.

(69) An inspection will not be counted if, due to force majeure, it cannot be carried out.

(70) The participating State which requests an inspection will state the reasons for such a request.

(71) The participating State which has received such a request will reply in the affirmative to the request within the agreed period of time, subject to the provisions contained in paragraphs (67) and (68).

(72) Any possible dispute as to the validity of the reasons for a request will not prevent or delay the conduct of an inspection.

(73) The participating State which requests an inspection will be permitted to designate for inspection on the territory of another State within the zone of application for CSBMs, a specific area. Such an area will be referred to as the "specified area". The specified area will comprise terrain where notifiable military activities are conducted or where another participating State believes a notifiable military activity is taking place. The specified area will be defined and limited by the scope and scale of notifiable military activities but will not exceed that required for an army level military activity.

(74) In the specified area the representatives of the inspecting State accompanied by the representatives of the receiving State will be permitted access, entry and unobstructed survey, except for areas or sensitive points to which access is normally denied or restricted, military and other defence installations, as well as naval vessels, military vehicles and aircraft. The number and the extent of the restricted areas should be as limited as possible. Areas where notifiable military activities can take place will not be declared restricted areas, except for certain permanent or temporary military

installations which, in territorial terms, should be as small as possible, and consequently, those areas will not be used to prevent inspection of notifiable military activities. Restricted areas will not be employed in a way inconsistent with the agreed provisions on inspection.

(75) Within the specified area, the forces of participating States other than the receiving State will also be subject to the inspection conducted by the inspecting State.

(76) Inspection will be permitted on the ground, from the air, or both.

(77) The representatives of the receiving State will accompany the inspection team, including when it is in land vehicles and an aircraft from the time of their first employment until the time they are no longer in use for the purposes of inspection.

(78) In its request, the inspecting State will notify the receiving State of:

(78.1) - the reasons for the request;

(78.2) - the location of the specified area defined by geographical co-ordinates;

(78.3) - the preferred point(s) of entry for the inspection team;

(78.4) - the mode of transport to and from the point(s) of entry and, if applicable, to and from the specified area;

(78.5) - where in the specified area the inspection will begin;

(78.6) - whether the inspection will be conducted from the ground, from the air, or both simultaneously;

(78.7) - whether aerial inspection will be conducted using an airplane, a helicopter, or both;

(78.8) - whether the inspection team will use land vehicles provided by the receiving State or, if mutually agreed, its own vehicles;

(78.9) - information for the issuance of diplomatic visas to inspectors entering the receiving State.

(79) The reply to the request will be given in the shortest possible period of time, but within not more than twenty-four hours. Within thirty-six hours after the issuance of the request, the inspection team will be permitted to enter the territory of the receiving State.

(80) Any request for inspection as well as the reply thereto will be communicated to all participating States without delay.

(81) The receiving State should designate the

point(s) of entry as close as possible to the specified area. The receiving State will ensure that the inspection team will be able to reach the specified area without delay from the point(s) of entry.

(82) All participating States will facilitate the passage of the inspection teams through their territory.

(83) Within 48 hours after the arrival of the inspection team at the specified area, the inspection will be terminated.

(84) There will be no more than four inspectors in an inspection team. While conducting the inspection the inspection team may divide into two parts.

(85) The inspectors and, if applicable, auxiliary personnel, will be granted during their mission the privileges and immunities in accordance with the Vienna Convention on Diplomatic Relations.

(86) The receiving State will provide the inspection team with appropriate board and lodging in a location suitable for carrying out the inspection, and, when necessary, medical care; however, this does not exclude the use by the inspection team of its own tents and rations.

(87) The inspection team will have use of its own maps, own photo cameras, own binoculars and own dictaphones, as well as own aeronautical charts.

(88) The inspection team will have access to appropriate telecommunications equipment of the receiving State, including the opportunity for continuous communication between the members of an inspection team in an aircraft and those in a land vehicle employed in the inspection.

(89) The inspecting State will specify whether aerial inspection will be conducted using an airplane, a helicopter or both. Aircraft for inspection will be chosen by mutual agreement between the inspecting and receiving States. Aircraft will be chosen which provide the inspection team a continuous view of the ground during the inspection.

(90) After the flight plan, specifying, inter alia, the inspection team's choice of flight path, speed and altitude in the specified area, has been filed with the competent air traffic control authority the inspection aircraft will be permitted to enter the specified area without delay. Within the specified area, the inspection team will, at its request, be permitted to deviate from the approved flight plan to make specific observations provided such de-

viation is consistent with paragraph (74) as well as flight safety and air traffic requirements. Directions to the crew will be given through a representative of the receiving State on board the aircraft involved in the inspection.

(91) One member of the inspection team will be permitted, if such a request is made, at any time to observe data on navigational equipment of the aircraft and to have access to maps and charts used by the flight crew for the purpose of determining the exact location of the aircraft during the inspection flight.

(92) Aerial and ground inspectors may return to the specified area as often as desired within the 48-hour period.

(93) The receiving State will provide for inspection purposes land vehicles with cross country capability. Whenever mutually agreed taking into account the specific geography relating to the area inspected, the inspecting State will be permitted to use its own vehicles.

(94) If land vehicles or aircraft are provided by the inspecting State, there will be one accompanying driver for each land vehicle, or accompanying

aircraft crew.

(95) The inspecting State will prepare a report of its inspection and will provide a copy of that report to all participating States without delay.

(96) The inspection expenses will be incurred by the receiving State except when the inspecting State uses its own aircraft and/or land vehicles. The travel expenses to and from the point(s) of entry will be borne by the inspecting State.

(97) Diplomatic channels will be used for communications concerning compliance and verification.

(98) Each participating State will be entitled to obtain timely clarification from any other participating State concerning the application of agreed confidence and security building measures. Communications in this context will, if appropriate, be transmitted to all other participating States.

* as defined in the provisions on Prior Notification of Certain Military Activities.

List of Signatories

**Document of the Stockholm Conference on Confidence-
and Security-Building Measures and Disarmament
in Europe Convened in Accordance with the Relevant
Provisions of the Concluding Document of the Madrid Meeting
of the Security and Co-operation in Europe
(19 September 1986)**

Austria	Luxembourg
Belgium	Malta
Bulgaria	Monaco
Canada	Netherlands
Cyprus	Norway
Czech and Slovak Federal Republic	Poland
Denmark	Portugal
Finland	Romania
France	San Marino
German Democratic Republic ¹	Spain
Germany, Federal Republic of ¹	Sweden
Greece	Switzerland
Holy See	Turkey
Hungary	Union of Soviet Socialist Republics
Iceland	United Kingdom
Ireland	United States of America
Italy	Yugoslavia
Liechtenstein	

¹ In 1990 the two States merged forming Germany.

Chapter 15

The INF Treaty (1987)

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As part of the Intermediate Range Nuclear Forces (INF) Treaty that was signed in Washington, D.C. on 8 December 1987, the United States and the Soviet Union agreed to unprecedented verification procedures. The purpose of this chapter is to analyse the verification provisions of the INF Treaty, to assess the actual practice of verification under the terms of the accord, and to evaluate the overall performance of the INF verification measures with an eye to their possible applicability to other arms control agreements.

I - Basic Obligations of the INF Treaty

Under the terms of the INF Treaty, which entered into force on 1 June 1988, the United States and the Soviet Union must eliminate all land-based nuclear missiles with ranges between 300 and 3,400 miles and must forswear their subsequent possession. Intermediate-range missile systems are to be eliminated in two phases over three years; shorter-range missile systems are to be eliminated within a single 18-month period. The Treaty, which is of unlimited duration, also provides for the elimination of the launchers, support structures, and support equipment for the intermediate-range and shorter-range missiles and prohibits the production and flight-testing of any intermediate-range or shorter-range missiles.²

II - Verification Tasks and Provisions

The verification challenges posed by the INF Treaty were novel. The demands on verification were complicated by the nature of the prohibited weapon systems which were mobile, relatively small, and therefore easy to conceal. Treaty restrictions on missile production and provisions for missile destruction also necessitated more intrusive forms of inspection than had previously been adopted in bilateral US-Soviet arms control accords.³ INF verification tasks, however, were simplified by the Treaty's requirements for the elimination of two entire classes of missile systems and

¹ The authors are grateful to Jerald L. Coffman and Kurt Porter for their comments on an earlier version of this study.

² The Treaty allowed each side to launch up to 100 intermediate-range missiles during the first six months of the elimination period for the purpose of destroying them. The Soviet Union eliminated 72 SS-20s by this means.

³ For a discussion of on-site inspection precedents see William Potter, "The Evolution of Soviet Attitudes Toward On-Site Inspection", in Lewis Dunn (ed.), *Arms Control Verification and the New Role of On-Site Inspection*, Lexington, MA, Lexington Books, 1989, pp. 185-206.

the ban on flight-testing of those systems. The fundamental INF verification demand thus became one of detecting a single prohibited missile or launcher following the specified elimination period.

Four principal verification tasks are spelled out in the INF Treaty. They are to confirm:

1. the initial missile and launcher inventories;
2. the elimination of those weapon systems;
3. the residual levels during the two phases of the elimination period;
4. the absence of INF missiles, launchers and support facilities after the elimination period.⁴

These tasks are to be accomplished by a variety of measures provided for under the terms of the Treaty, most of which fall into one of two categories: notification and inspection.⁵

The primary purpose of notification is to provide the other Party to the accord with information on changes that have taken place or on planned activities in the domain covered by the Treaty. Notification is provided for in the following instances:

1. Not less than 30 days after the end of each six-month interval following the entry into force of the Treaty of all changes, completed and in process, of data contained in the Memorandum of Understanding (Article IX, paragraph 4);
2. Not less than 30 days in advance of the scheduled date of the elimination of a specific deployment area, missile operating base or missile-support facility (Article IX, paragraph 5a);
3. Not less than 30 days in advance of the scheduled date of changes in the number or location of elimination facilities (Article IX, paragraph 5b);
4. Not less than 30 days in advance of the scheduled date of initiation of elimination of missiles and their stages, launchers, and support structures and equipment (Article IX, paragraph 5c);
5. Not less than ten days in advance of the scheduled date of launching intermediate-range missiles for the purpose of their destruction (Article IX, paragraph 5d);

⁴ For a discussion of these tasks and the verification regime necessary to fulfil them see Jim Blackwell, "Contributions and Limitations of On-Site Inspection in INF and START", in Dunn, pp. 95-120.

⁵ For a discussion of the INF Treaty with respect to these categories see V. Baranovsky, "Commentary on the Treaty", *Mirovaya Ekonomika i Mezhdunarodnye Otnosheniya*, February 1988, pp. 21-34. In addition to these two broad categories of measures to enhance verification, the Treaty also provided for certain collateral constraints on missile activities and for co-operative measures at deployment bases to assist national technical means of verification. See Article XII of the Treaty, Blackwell, pp. 3-4, and Jeremy K. Leggett and Patricia M. Lewis, "Verifying a START Agreement: Impact of INF Precedents", *Survival*, September/October 1988, p. 413.

6. Within 48 hours after changes have taken place in the number of intermediate- and shorter-range missiles, launchers, and support structures and equipment resulting from their elimination (Article IX, paragraph 5e);
7. Within 48 hours after completion of transit of intermediate- and shorter-range missiles or their launchers or the movement of INF training missiles and training launchers (Article IX, paragraph 5f);
8. Not less than ten days in advance of the scheduled date of the launch of a booster system for R&D purposes (Article IX, paragraph 6);
9. Not less than 30 days in advance of the scheduled date of initiation of conversion of a missile-operating base listed in the Memorandum of Understanding for use as a base associated with GLBM or GLCM systems not subject to the INF Treaty (Article X, paragraph 9);
10. Not less than 30 days in advance of the scheduled date for the elimination of training missiles, training launchers, or training launch canisters (Protocol on Elimination, section II, paragraph 2 and section IV, paragraph 3d);
11. At the time of the scheduled placement on static display of operating or training missiles, launch canisters, or launchers (Protocol on Elimination, section V, paragraph 2c); and
12. Upon the intention to carry out an inspection (not less than 16 or 72 hours in advance of the inspection depending on the type of inspection) (Protocol on Inspection, section IV, paragraph 1 a,b).

The notifications required by the Treaty are to be provided through the Nuclear Risk Reduction Centers established in accordance with the 15 September 1987 agreement between the United States and the Soviet Union.⁶

In addition to the aforementioned kinds of notification, the verification tasks of the INF Treaty are to be accomplished by national technical means (NTMs) and by two broad categories of on-site inspection: routine inspections and short notice inspections.⁷

NATIONAL TECHNICAL MEANS

The INF Treaty builds upon prior verification methods in its use of NTMs in tandem with on-site inspection. Article XII reiterates the principle of non-interference with NTMs and also provides a significant co-operative measure to enhance their effectiveness. This measure entails the right of each Party to request open display of road-mobile ground-launched ballistic missiles six times a year until an accord limiting

⁶ See the Agreement Between the United States of America and the Union of Soviet Socialist Republics on the Establishment of Nuclear Risk Reduction Centers, September 15, 1987. See also Article XIII, paragraphs 2a-d of the INF Treaty.

⁷ For a discussion of these two categories of on-site inspection as well as a third category, suspect site inspection, not relevant to the INF Treaty, see Lewis A. Dunn with Amy Gordon, "Striking a Balance: Toward an On-Site Inspection Strategy", in Dunn, pp. 234-238.

strategic weapons becomes effective (or for a maximum of three years after the INF Treaty enters into force). Under the terms of this provision, the roofs of all launcher structures must be opened and missiles on launchers moved into the open no later than six hours after a request is received. The roofs must remain open and the missiles on launchers must remain in place until twelve hours have elapsed from the time of the receipt of the request.

ROUTINE INSPECTIONS

Routine inspections are those in which the timing and location of the inspections are predetermined by the provisions of the arms control accord. In the case of the INF Treaty, routine inspections constitute the largest component of on-site inspections and include baseline, elimination and close-out inspections as well as continuous perimeter/portal monitoring.

Baseline inspections are designed to verify the declared database of the items affected by the Treaty. Under Article XI, paragraph 3 of the INF Treaty, the United States and the Soviet Union have the right to conduct inspections at all missile operating bases, support facilities (other than production facilities) specified in the Treaty's Memorandum of Understanding (MOU) and at all elimination facilities specified in the initial update of the MOU. Inspections may begin 30 days after entry into force of the Treaty and must be completed no more than 90 days after entry into force.

The baseline inspections provision affects fourteen facilities (at ten different sites) in the United States; twelve facilities in Belgium, Federal Republic of Germany, Italy, the Netherlands and the United Kingdom; seven facilities in the German Democratic Republic and Czechoslovakia; and 126 facilities in the Soviet Union.⁸

Elimination inspections are another form of routine on-site inspection. As the name implies, they are designed to verify the elimination of prohibited treaty items in accordance with specified elimination procedures. Under Article XI, paragraph 7 of the INF Treaty, the United States and the Soviet Union are required to conduct inspections of the process of elimination of INF missiles, launchers and associated support equipment at specified elimination facilities. Elimination inspections are obligatory under the terms of the INF Treaty, unlike the other types of on-site inspections which are optional. There is no set limit on the number of elimination inspections. Each Party may conduct as many inspections during the three-year elimination period as are necessary to verify the elimination of all treaty-prohibited items.

A third variety of routine inspections are close-out inspections. They are intended to monitor that facilities have ceased production or storage of prohibited treaty items. Under Article XI, paragraph 4 of the INF Treaty, each Party has the right, within 60

⁸ "The INF Treaty: The Task of Verification and Destruction Begins", *Arms Control Update*, Washington, D.C., US Arms Control and Disarmament Agency, July 8, 1988, p. 4.

days after the scheduled date of elimination of missile operating bases and missile support facilities (other than production facilities), to confirm by inspection that treaty-limited activities have ceased. Close-out inspections, however, are not permitted in cases when a baseline inspection is conducted after the scheduled date of elimination of a facility.

A fourth type of routine on-site inspection provided for under the INF Treaty is continuous monitoring of the portals of any facility that assembles a ground-launched ballistic missile (GLBM) with stages that are outwardly similar to any stage of a solid-propellant, longer range INF GLBM. If a Party has no such facility, the portals of an agreed former INF missile production facility may be monitored.⁹ The facilities subject to these provisions for continuous monitoring are the former SS-20 production and final assembly plant at Votkinsk and the Pershing production plant at Magna (Utah).¹⁰

Article IX of the Protocol on Inspection specifies the monitoring rights and obligations involved in continuous portal monitoring. It requires, among other things, that all vehicles which can contain the longest stage of an intermediate-range GLBM (i.e., the first stage of an SS-20) exit through one rail or one road portal; it also provides for the use of a combination of sensors, surveillance systems and measuring equipment to monitor traffic at those portals. The technologies employed include X-ray imaging to scan missile canisters, cameras for monitoring the perimeter, and scales to weigh vehicles that might carry treaty-restricted items.¹¹

SHORT NOTICE INSPECTIONS

Short-notice on-site inspections are distinguished from routine ones by the timing of the inspection. The objective of the former category of inspections is to minimize the time between notification and the arrival of an inspection team in order to increase the difficulty, expense and risk of removing prohibited items.¹²

According to Article XI, paragraph 5, of the INF Treaty, each Party is entitled to conduct a specific number of short-notice inspections per year at agreed locations for 13 years after the entry into force of the Treaty. For the first three years of the Treaty, before all systems have been eliminated, both Parties have the right to conduct 20 short-notice inspections at both currently active bases and facilities, as well as those that have been eliminated. This number declines to 15 short-notice inspections per year in the subsequent five-year period and falls to 10 per year during the last five

⁹ See INF Treaty, Article XI, paragraph 6.

¹⁰ The ban on the production of all INF missiles removed the main rationale for continuous monitoring. The Soviet Union, however, raised the issue that a compliance question might arise due to the similarity of the first stages of the SS-20 and the SS-25, both of which were produced at the Votkinsk plant. See Blackwell, p. 7.

¹¹ See Lewis Dunn, "Verification of Short-Range Nuclear Forces Arms Control: An Initial Inventory of Measures and Uncertainties". Paper prepared for the Workshop on Low Yield Nuclear Weapons, September 11-12, 1989.

¹² See Blackwell, pp. 99-100.

years. No more than half of these inspections per calendar year may be used in any single basing country. This declining schedule of short-notice inspections is intended to take account of the gradual elimination of INF facilities and the diminished effectiveness of covert systems that cannot be flight tested.

Under the terms of the Protocol of Inspection, Parties must provide at least 16 hours' notification before the planned arrival of an inspection team to one of the points of national entry. The actual inspection site, however, need not be specified until four hours prior to departure for the site from the point of entry.

THE ROLE OF THIRD PARTIES

Although the INF Treaty is principally bilateral in nature, it also involves third Parties whose territory is affected by the accord's elimination requirements and verification procedures.¹³ In addition to the Protocol to the Treaty regarding the conduct of inspection on the "basing countries", the involvement of third countries is achieved by two parallel agreements between the United States and the Soviet Union and their respective allies (concluded on 11 December 1987) and by the exchange of notes between each country subject to inspection and the inspecting Party. It should be pointed out that the role of third Parties in the inspection process is basically a passive one and does not, for example, assure their access to the full inspection report.

III - Implementation of the Verification Regime

Policy implementation often involves the modification and distortion of the policy objectives intended by the formal decision-makers. This does not, however, appear to be the case with respect to implementation of the verification provisions of the INF Treaty. Indeed, both Parties to the Treaty have expressed satisfaction with the implementation of the inspection process. General Roland Lajoie, Director of the US On-Site Inspection Agency (OSIA), for example, has noted the "real spirit of co-operation" during the baseline inspections and acknowledged that the "process was a lot smoother than [he] would have anticipated". "[T]he results were particularly positive", he pointed out, "when you consider that neither side had ever done this before".¹⁴

ORGANIZATION FOR INSPECTIONS

On the US side, the demanding task of implementing the on-site inspection provisions of the INF Treaty was assigned to the On-Site Inspection Agency, which was

¹³ For a more detailed discussion of the role of third parties in the INF Treaty see Serge Sur, *Verification Problems of the Washington Treaty on the Elimination of Intermediate-Range Missiles*, UNIDIR Research Papers, New York, 1988, pp. 20-23.

¹⁴ "Insights of an On-Site Inspector", *Arms Control Today*, November 1988, p. 3.

established on 15 January 1988. In addition to carrying out inspections of Soviet INF facilities, the agency was also charged with ensuring that the Soviet Union was able to exercise its inspection rights under the terms of the INF Treaty.¹⁵ These missions required rapid action in the form of staffing the new agency, recruiting and training several hundred inspectors and escorts for Soviet inspectors, resolving logistics, and actually conducting over one hundred on-site inspections in only a few months' time.¹⁶

The Soviet Union has also established a standing service charged with executing on-site inspections. The service, whose functions are similar to the US On-Site Inspection Agency, is attached to the USSR National Nuclear Risk Reduction Center headed by Major-General V. I. Medvedev.¹⁷

To promote the objectives and implementation of the provisions of the INF Treaty, a Special Verification Commission (SVC) was also established. As specified by Article XIII, clause 1 of the Treaty, the SVC is empowered to resolve questions relating to compliance and to determine measures that may be necessary to improve the effectiveness of the Treaty.

The first meeting of the SVC was held in Geneva in July 1988. The Parties made progress at the meeting in devising measures to promote effective implementation of the Treaty's provisions. Five subsequent meetings of the SVC were held in Geneva in 1988 and 1989. These meetings led to the signing of agreed Statements on continuous monitoring procedures at Votkinsk and Magna. At the sixth session of the SVC in December 1989, "The Memorandum of Agreement Regarding the Implementation of the Verification Provisions" of the INF Treaty was signed and entered into force. It specifies the procedures for implementing the Treaty, including general rules for conducting inspections and the equipment to be used. Six annexes to the memorandum deal in detail with the technical parameters of verification practices.

THE INSPECTION EXPERIENCE

During the first week of July 1988 the United States and the Soviet Union began to send teams of INF inspectors to each other's sites. By May 1990, US inspection teams had logged well over a million miles on US military aircraft and more than 225,000

¹⁵ The OSIA, operating with the Department of Defense, is staffed by both uniformed personnel and civilians from various governmental agencies. The director of the OSIA is appointed by the Secretary of Defense and reports to a Department of Defense executive committee. Deputy directors of the agency are assigned by the Arms Control and Disarmament Agency, the Department of State, and the Federal Bureau of Investigation. For a more detailed discussion of the organization and operation of the OSIA see Edward J. Lacey, "On-Site Inspection: the INF Experience", in Dunn, pp. 3-14.

¹⁶ Surprisingly, the OSIA was able to accomplish these tasks without expending half of its allocated budget of \$89.2 million. See "Insights of an On-Site Inspector", p. 3.

¹⁷ See Vladimir Frangulov, "Verification of the INF Treaty: New Problems and Their Solution", *Disarmament and Security, 1988-1989 IMEMO Yearbook*, Moscow, Novosti Press Agency Publishers, 1989, p. 154.

more miles on Aeroflot. This travel involved over 400 US inspectors making 328 inspections.¹⁸ Similar numbers of Soviet inspectors had visited US sites and conducted 135 inspections by the beginning of May 1990.¹⁹ Among the consequences of these frequent reciprocal inspections is that they no longer make the headlines - a good sign of their routinization.

The baseline inspection process began on 1 July 1988 and was completed by 31 August 1988. In total, 146 inspections in nine countries were conducted, the United States undertaking 115 separate inspections to cover 133 Soviet INF facilities, and the Soviet Union implementing 21 inspections to cover 31 US facilities.²⁰

In addition to verifying the database of treaty-limited items, the baseline inspections were important in establishing good working relations between the OSIA and the Soviet inspection authority and in institutionalizing the process of on-site monitoring. As a senior OSIA staff member points out, these developments "are crucial to successful implementation of the INF Treaty inspection regime".²¹

The obligatory elimination inspections also began in 1988. The Soviets started to eliminate their INF missiles and equipment in August and the US followed suit in September. By the end of April 1990 the Soviet Union had conducted 61 elimination inspections in the United States, and the OSIA had completed 97 similar inspections on Soviet territory. By that date, the United States had eliminated approximately 57 per cent of its INF missiles and the Soviet Union had eliminated over 86 per cent of its INF missiles.²²

Once a Party to the Treaty declares that all INF activity has ceased at a designated facility, the other Party has sixty days within which to confirm by on-site inspection the new status of the facility. By the beginning of May 1990 the Soviet Union had conducted seven of these close-out inspections, and the United States had completed 80.²³

Unlike the aforementioned types of routine on-site inspections, both the United States and the Soviet Union have conducted continuous, long-term monitoring of the perimeter and main points of access to the Votkinsk missile plant in the Soviet Union and the Hercules plant in Magna (Utah). US inspectors at Votkinsk made use of their full complement of eight challenges a year to open up Soviet launch canisters to view

¹⁸ See John Prados, "Collateral Intelligence", *Bulletin of the Atomic Scientists*, November 1989, p. 6 and "Intermediate-Range Nuclear Forces Treaty Chronology", *Arms Control Reporter*, May 1990, p. 403.B.751.

¹⁹ "Intermediate-Range Nuclear Forces Treaty Chronology", p. 403.B.751.

²⁰ Lacey, p. 7. The OSIA, for which Lacey serves as scientific director, reports the slightly higher figure of 117 baseline inspections. See "Blue on Red", OSIA Status Report as of November 2, 1989.

²¹ Lacey, p. 10.

²² "Intermediate-Range Nuclear Forces Treaty Chronology".

²³ *Ibid.*

the missiles. Because sophisticated X-ray measuring equipment was not initially installed, inspectors relied mainly on tape measures and measuring sticks.²⁴

Both the United States and the Soviet Union have also made use of their annual "quota" of short-notice inspections. By the end of April 1990 the United States had conducted 34 short-notice inspections, and the Soviet Union had completed 36.²⁵

Not surprisingly, given the novelty of the experience and the complexity of the inspection operation, one can point to a number of areas in which improvements could be made. It has been suggested, for example, that inspection timetables be made somewhat more flexible to enable inspectors to gain some sleep before immediately proceeding to safety briefings and inspections after lengthy flights.²⁶ The United States learned that given the distances involved in the Soviet Union, it was desirable to pre-position teams of inspectors and their support staff at formal bases in Europe and Japan rather than running the inspection out of the United States. Even the few instances in which each side found the other to be guilty of technical violations²⁷ have not detracted from the overall impression - expressed by US and Soviet officials alike - that the on-site inspection experience in general has been very successful.²⁸ Indeed, the major cautionary note that has been sounded is that in light of the successful on-site inspection experience with INF, one must guard against the danger of seeing OSI as a verification panacea.

THE FINANCIAL BURDEN

The operation of the OSIA is also encouraging regarding the financial burden of on-site inspection. The agency has actually managed to expend less than its allocated budget

²⁴ See Prados, p. 6. The US X-ray machine known as Cargospan was declared operational in early February 1990, and a dispute involving its use took place shortly thereafter. The Soviet Union refused to allow inspection by Cargospan of three missile canisters shipped from the Votkinsk production facility at the beginning of March. After certain technical adjustments were made, the Soviet Union allowed Cargospan to be used for the first time on March 21. Although the issue of the X-ray machine's use was settled, "US officials continue to consider the fact that three missiles were not subject to Cargospan inspection to be a serious compliance issue". "Controversies Mar Soviet INF Compliance", *Arms Control Today*, April 1990, pp. 29 and 32.

²⁵ "Intermediate Range Nuclear Forces Treaty Chronology".

²⁶ See "Insights of an On-Site Inspector", p. 10.

²⁷ Prados, p. 7. During 1989 the United States noted three INF compliance issues of concern, one of which (the transit of missiles on launchers at Lebedin) resulted in a non-compliance finding. In every case, however, the issue or violation was resolved or corrected after it was raised with the Soviets. See "Excerpt from US Report on Soviet Violations", in *Arms Control Reporter*, March 1990, p. 403.D.59.

²⁸ See Frangulov, p. 155. In addition to the dispute over Cargospan, probably the most contentious compliance issue involved the discovery of previously unknown Soviet-made SS-23 missiles in the German Democratic Republic, Czechoslovakia and Bulgaria. The Soviet Union declared that it had transferred the conventionally armed missiles in 1985 before the INF Treaty was concluded. The United States has accepted the Soviet government's explanation, and the issue has been resolved. See "Controversies Mar Soviet INF Compliance", p. 29. The issue, however, points out the need for an explicit non-circumvention provision.

to date. Its budget request of approximately \$50 million per year for 1990 and 1991 is moderate when compared with the costs of maintaining the weaponry that the INF Treaty eliminated.²⁹

Calculation of the financial burden of on-site inspection, however, must also take account of the costs incurred by the facilities subject to treaty verification provisions. Experience with implementation of the INF Treaty suggests that these expenses may be substantial and include costs for both the preparation and conduct of inspections. Officials of the Martin Marietta Corporation, for example, have reported expenses of \$5 million in preparation for an INF inspection at its Baltimore site.³⁰ Additional costs might be incurred due to work delays and transfer of sensitive (but non-treaty-related) activities to other locations.

The preparation costs for INF on-site inspections on US soil were defrayed by the US Government. The Government also adopted measures to protect defence contractors from being placed at a competitive disadvantage due to their involvement with INF-covered activities.³¹ Although these costs and comparable ones incurred by the Soviet Government are unlikely to be the determining factor in future arms control decisions, one should not discount their potential impact. The magnitude of the costs will also undoubtedly rise as more extensive verification provisions accompany new arms control agreements. It has been estimated, for example, that monitoring START, chemical weapons and conventional force accords could each add several hundreds of millions of dollars annually to the US on-site inspection budget.³² This, of course, is in addition to the expenditures required to support verification by national technical means.

DOMESTIC LEGAL ISSUES

Until recently, the interaction of constitutional law and arms control treaties generated little public attention or scholarly analysis.³³ The intrusive verification measures actuated by the INF Treaty, however, have changed this situation; in the words of one legal scholar, the "incipient 'lawyerization' of the arms control process is now inevitable, for better or worse".³⁴

²⁹ See Dunn (ed.), *Arms Control Verification*, p. 245 and *On-Site Inspection Agency*, Report of a Staff Study Mission to Intermediate-Range Nuclear Forces Treaty (INF) Sites in the United States, Europe, and the Soviet Union to the US House Committee on Foreign Affairs, Washington, D.C., US Government Printing Office, 1989. The OSIA budget figure, however, excludes the cost of some inspection-related services provided by other government agencies and the armed forces.

³⁰ Cited by Dunn (ed.), *Arms Control Verification*, p. 246. Expenses included shrouding sensitive equipment and sending workers home during the inspection.

³¹ *Ibid.*, p. 247.

³² *Ibid.*, p. 245.

³³ An important exception were the publications of Louis Henkin. See his *Arms Control and Inspection in American Law*, New York, Columbia University Press, 1958 and *Foreign Affairs and the Constitution*, New York, Foundation Press, 1972.

³⁴ David Koplow, "The Law of On-Site Inspection: Arms Control Verification and the Fourth Amendment", Dunn, p. 208.

Some of the potential Fourth and Fifth Amendment legal issues raised by on-site inspections were finessed in the implementation of the INF Treaty by the US Government's readiness to defray the inspection preparation costs incurred by private defence contractors and by its ability to gain the consent of the contractors to on-site inspection. The Government was thus able to avoid the charge of breaching Fifth Amendment rights to securing property without due process and the Fourth Amendment protection against unreasonable searches and seizure.³⁵ The absence in the INF Treaty of any provision for "anytime, anyplace" (i.e., so-called "suspect-site" inspections) relieved the courts of more difficult challenges to the Fourth Amendment. It is not clear, for example, how the courts would rule on the constitutionality of on-site inspections that were not covered by the implicit or explicit consent of the private Parties affected by treaty-mandated inspection. Such issues may well arise should a future START or chemical weapons accord provide for short-notice, suspect-site inspections.³⁶

IV - INF On-Site Inspection: A Balance Sheet

One cannot but be impressed by the overall record to date of implementing the verification provisions of the INF Treaty. One must be careful in assessing the Treaty's on-site inspection provision, however, to distinguish between its effectiveness as a vehicle for implementing the specific provisions of the INF Treaty and its potential applicability to other arms control accords.³⁷

There is little doubt, for example, that the package of on-site inspection measures provided by the INF Treaty will enable both Parties to the accord to have confidence that all declared INF missiles and support equipment have been eliminated, and that INF Treaty-prohibited activity has ceased at designated facilities. The short-notice inspections permitted under the Treaty should also deter the resumption of Treaty-precluded behaviour.³⁸ Taken as a whole, the full complement of on-site

³⁵ The Fourth Amendment to the US Constitution specifies "the right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures . . .". The Fifth Amendment provides that "No person... shall be deprived of life, liberty, or property, without due process of law . . .".

³⁶ For a detailed analysis of these and other contingencies see Koplow in Dunn, pp. 207-230; Koplow, "Arms Control Inspection: Constitutional Restrictions on Treaty Verification in the United States", *New York University Law Review*, 63, 1988, pp. 229; Edward A. Tanzman, "Constitutionality of Warrantless On-Site Arms Control Inspections in the United States", *Yale Journal of International Law*, 13, 1988, pp. 21; Tanzman, "Legal Aspects of Implementing a Global Chemical Weapons Convention under Domestic Laws", Paper delivered at the 1989 Annual Meeting of the American Association for the Advancement of Science; and Thomas A. Connolly, "Warrantless On-Site Inspections for Arms Control Verification: Are They Constitutional?", *Stanford Journal of International Law*, 24, 1987, p. 179.

³⁷ The importance of this distinction is noted by Serge Sur in his discussion of "exemplarity" and "singularity". See his *Verification Problems of the Washington Treaty on the Elimination of Intermediate-Range Missiles*, pp. 19-27.

³⁸ On this point, see Blackwell, p. 11.

inspection measures and the process of their implementation are likely to serve as important measures for building confidence between the United States and the Soviet Union. They may also have the salutary domestic effect (not associated with national technical means of verification) of reinforcing openness and reducing secrecy about military matters.

Important components of the INF on-site inspection package are also relevant to other prospective arms control agreements. The INF co-operative measure relating to the open display of road-mobile GLBMs, for example, is precedent-setting and is directly relevant to a future START accord. Routine baseline inspections, comparable to those provided under the terms of the INF Treaty, also are apt to be a useful supplement to national technical means in establishing an agreed database for conventional arms limitations. Similarly, elimination inspections modelled after those in the INF accord will need to be an important element of any future chemical weapons, START or conventional forces agreement. Continuous on-site monitoring provisions are also likely to be called for in prospective arms control accords, given the need to obtain on-going observations of chemical weapons production facilities and stockpiles, production plants for mobile missiles, and conventional military equipment storage parks.³⁹ National technical means of surveillance, by themselves, are unlikely to be adequate for the aforementioned tasks.

Having emphasized these positive attributes of on-site inspection and the potential applicability of INF verification measures to other arenas, one must also be attentive to their limitations.⁴⁰ Some of these difficulties are intrinsic to the genre of OSI and include the risk of losing sensitive national security and proprietary information. This risk, while manageable under INF, would increase substantially were on-site inspections expanded to include provisions for suspect-site inspection with no right of refusal. Indeed, concern over this prospect has led to a rethinking of US policy with respect to demands for suspect-site inspection.

The potential financial burden and legal challenges of on-site inspection have been noted previously. It is worthwhile here simply to reiterate the point that the magnitude of the financial burden and the scope of the legal challenge will vary according to the specific provisions of the on-site inspection regime, with suspect-site inspections likely to raise the most troublesome legal questions.

Finally, one must avoid asking too much of on-site inspection. Neither the package of OSI measures provided in the INF Treaty or more intrusive variants such as suspect-site can provide complete assurance that no illegal activity is being conducted.⁴¹ On-site inspections can only raise confidence that prohibited activities are not taking place at a given location at the time of the inspection. This important

³⁹ See Dunn (ed.), *Arms Control Verification*, p. 240, on this point.

⁴⁰ For a discussion of OSI limitations see Sidney Graybeal and Michael Krepon, "The Limitations of On-Site Inspection", *Bulletin of the Atomic Scientists*, December 1987.

⁴¹ For a critique of suspect-site inspections see Dunn (ed.), *Arms Control Verification*, p. 249.

confidence-building measure should not lead to a false sense of confidence or the readiness to embrace on-site inspection as a substitute for national technical means of verification. Fortunately, the INF Treaty combines elements of national technical means with on-site inspection and is thus the most comprehensive verification system currently in effect.

Annexes

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Table 1: Procedures related to the INF Treaty of 1987
Main Treaty Provisions and Monitoring and Verification Methods

	Factfinding							Assessment procedures					
	0	1	2	3	4	5	6	7	8	9	10	11	12
<i>Establishment of data base</i>													
Limitation of use													
Limitation of deployment													
Limitation of testing													
Limitation of possession													
Limitation of production													
Limitation of transfer													
Prohibition of use													
<i>Prohibition of deployment</i>													
<i>Prohibition of testing</i>													
<i>Prohibition of possession</i>													
<i>Prohibition of production</i>													
Prohibition of transfer													
<i>Destruction</i>													

0 = No method; 1 = National Technical Means; 2 = Exchange of data; 3 = Consultation; 4 = Control Posts/Observation; 5 = On-site inspection on a State territory; 6 = On-site inspection on a non-State territory; 7 = IAEA Safeguards; 8 = Review Conference; 9 = Submission of report; 10 = Consultation; 11 = Referral to an international organization; 12 = Referral to the International Court of Justice.

For further explanation see also pages 356 and 32-34.

Explanatory note on Table 1

The INF treaty provides for the establishment of a database of land-based nuclear missiles with ranges between 500 and 5500 km. It identifies which missiles are to be eliminated, and for which deployment, testing, possession and production are to be prohibited.

Factfinding methods

The database (*Memorandum of Understanding*) exchanged at the signature of the Treaty (see Article IX, paragraphs 1, 2, 3, and 4) may be verified through consultation and exchange of data. (See Article XIII, paragraph 1, which establishes the Special Verification Commission, and paragraph 2, which explicitly assigns to the Nuclear Risk Reduction Centers responsibility for the exchange of data as required *inter alia* by paragraphs 3 and 4 of Article IX.

The database may furthermore be verified through on-site inspections (*Baseline inspections*) (See Article XI, paragraph 3, and Article XI, paragraph 5a; see also the Inspection Protocol - VII Inspections conducted pursuant to paragraphs 3, 4 or 5 of Article XI of the Treaty.)

All prohibitive clauses as well as the destruction obligation are verified through exchange of data and consultation in the Special Verification Commission (see Article XIII).

Similarly National Technical Means (Article XII) may in principle be used to verify compliance with all prohibitions and the destruction obligation. This method seems particularly useful in relation to the deployment prohibition (see Article XII) and the testing prohibition, a point emphasized by the American negotiators after the conclusion of the Treaty.

For the verification of the *deployment prohibition*, use shall be made of:

- . a special kind of observation, in which the roofs of all fixed structures for launchers located at a deployment base will be opened (Article XII, paragraph 3).
- . Challenge on-site inspections (provided for in Article XI, paragraph 5b).

The *testing prohibition*, is as mentioned above, mainly verified through NTM.

Apart from methods 2 and 3, the *possession prohibition* is verified through the other prohibitions and the destruction obligation.

The *production prohibition* is verified through Portal Monitoring (Article XI, paragraph 6).

The *destruction obligation* is verified:

- . With regard to missile operating bases and missile-support facilities, through on-site inspections (Article XI, paragraph 4) and challenge on-site inspections, coinciding with the challenge inspections of the deployment prohibition (Article XI, paragraph 5b).
- . With regard to missiles and launchers, through on-site inspections (Article XI, paragraph 7, there is no limitation on this inspection and challenge on-site inspection Article XI, paragraph 8).

Assessment procedures

Article XI, paragraph 7, stipulates that inspectors conducting missile elimination inspections shall determine that the processes specified for the elimination have been completed. The *Inspection Protocol* specifies that this should be a factual report written by the inspection team leader. The inspected Party shall have the right to include written comments in the report. The report shall be signed by the inspection team leader and by one of the members of the in-country escort (see XI, Inspection Report).

Article XIII, paragraph 1, stipulates that the Special Verification Commission shall (a) resolve questions relating to compliance with the obligations assumed; and (b) agree upon such measures as may be necessary to improve the viability and effectiveness of the Treaty.

The Relevant Treaty Articles

TREATY BETWEEN THE UNITED STATES OF AMERICA AND THE UNION OF SOVIET SOCIALIST REPUBLICS ON THE ELIMINATION OF THEIR INTERMEDIATE AND SHORTER RANGE MISSILES (8 DECEMBER 1987, WASHINGTON)

ARTICLE I

In accordance with the provisions of this Treaty (...), each Party shall eliminate its intermediate-range and shorter range missiles, not have such systems thereafter, and carry out the obligations set forth in this Treaty.

ARTICLE V

(1) Each Party shall eliminate all its shorter-range missiles and launchers of such missiles, and all support equipment of the categories listed in the Memorandum of Understanding associated with such missiles and launchers, so that no later than 18 months after the entry into force of this Treaty and thereafter no such missiles, launchers or support equipment shall be possessed by either party.

(2) No later than 90 days after entry into force of this Treaty, each Party shall complete the removal of all its deployed shorter-range missiles and deployed and non-deployed launchers of such missiles to elimination facilities and shall retain them at those locations until they are eliminated in accordance with the procedures set forth in the Protocol on Elimination. (...)

...

ARTICLE VI

(1) Upon entry into force of this Treaty and thereafter, neither Party shall:

a) produce or flight-test any intermediate-range missiles or produce any stages of such missiles; or

b) produce, flight-test or launch any shorter-range missiles or produce any stages of such missiles or any launchers of such missiles.

...

ARTICLE IX

(1) The Memorandum of Understanding contains categories of data relevant to obligations

undertaken with regard to this Treaty and lists all intermediate-range and shorter-range missiles, launchers of such missiles, and support structures and support equipment associated with such missiles and launchers, possessed by the Parties as of November 1, 1987. Updates of that data and notifications required by this Article shall be provided according to the categories of data contained in the Memorandum of Understanding.

(2) The Parties shall update that data and provide the notifications required by this Treaty through the Nuclear Risk Reduction Centres, established pursuant to the Agreement Between the United States of America and the Union of Soviet Socialist Republics on the Establishment of Nuclear Risk Reduction Centres of September 15, 1987.

(3) No later than 30 days after entry into force of this Treaty, each Party shall provide the other Party with updated data, as of the date of entry into force of this Treaty, for all categories of data contained in the Memorandum of Understanding.

(4) No later than 30 days after the end of each six-month interval following the entry into force of this Treaty, each Party shall provide updated data for all categories of data contained in the Memorandum of Understanding by informing the other Party of all changes, completed and in process, in that data, which have occurred during the six-month interval since the preceding data exchange, and the net effect of those changes.

(5) Upon entry into force of this Treaty and thereafter, each Party shall provide the following notifications to the other Party:

(a) notification, no less than 30 days in advance, of the scheduled date of the elimination of a specific deployment area, missile operating base or missile support facility;

(b) notification, no less than 30 days in advance, of changes in the number or location of elimination facilities, including the location and scheduled date of each change;

(c) notification, except with respect to launches of the intermediate-range missiles for the purpose of their elimination, no less than 30 days in advance, of the scheduled date of the initiation of the elimination of intermediate-range and shorter-range missiles, and stages of such missiles, and launchers of such missiles and support structures and support equipment associated with such missiles and launchers, including:

(i) the number and type of items of missile systems to be eliminated;

(ii) the elimination site;

(iii) for intermediate-range missiles, the location from which such missiles, launchers of such missiles and support equipment associated with such missiles and launchers are moved to the elimination facility; and

(iv) except in the case of support structures, the point of entry to be used by an inspection team conducting an inspection pursuant to paragraph 7 of Article XI of this Treaty and the estimated time of departure of an inspection team from the point of entry to the elimination facility;

(d) notification, no less than ten days in advance, of the scheduled date of the launch, or the scheduled date of the initiation of a series of launches, of intermediate-range missiles for the purpose of their elimination, including:

(i) the type of missiles to be eliminated;

(ii) the location of the launch, or, if elimination is by a series of launches, the location of such launches and the number of launches in the series;

(iii) the point of entry to be used by an inspection team conducting an inspection pursuant to paragraph 7 of Article XI of this Treaty; and

(iv) the estimated time of departure of an inspection team from the point of entry to the elimination facility;

(e) notification, no later than 48 hours after they occur, of changes in the number of intermediate-range and shorter-range missiles, launchers of such missiles and support structures and support equipment associated with such missiles and launchers resulting from elimination as described in the Protocol on Elimination, including:

(i) the number and type of items of a missile system which were eliminated; and

(ii) the date and location of such elimination; and

(f) notification of transit of intermediate-range or shorter-range missiles or launchers of such missiles, or the movement of training missiles or training launchers for such intermediate-range and shorter-range missiles, no later than 48 hours after it has been completed, including:

(i) the number of missiles or launchers;

(ii) the points, dates and times of departure and arrival;

(iii) the mode of transport; and

(iv) the location and time at that location at least

once every four days during the period of transit.

(6) Upon entry into force of this Treaty and thereafter, each Party shall notify the other Party, no less than ten days in advance, of the scheduled date and location of the launch of a research and development booster system as described in paragraph 12 of Article VII of this Treaty.

ARTICLE X

(1) Each party shall eliminate its intermediate-range and shorter-range missiles and launchers of such missiles and support structures and support equipment associated with such missiles and launchers in accordance with the procedures set forth in the Protocol on Elimination.

(2) Verification by on-site inspection of the elimination of items of missile systems specified in the Protocol on Elimination shall be carried out in accordance with Article XI of this Treaty, the Protocol on Elimination and the Protocol on Inspection.

(3) When a Party removes its intermediate-range missiles, launchers of such missiles and support equipment associated with such missiles and launchers from deployment areas to elimination facilities for the purpose of their elimination, it shall do so in complete deployed organizational units. For the United States of America, these units shall be Pershing II batteries and BGM-109G flights. For the Union of Soviet Socialist Republics, these units shall be SS-20 regiments composed of two or more battalions.

(4) Elimination of intermediate-range and shorter-range missiles and launchers of such missiles and support equipment associated with such missiles and launchers shall be carried out at the facilities that are specified in the Memorandum of Understanding or notified in accordance with paragraph 5(b) of Article IX of this Treaty, unless eliminated in accordance with Sections IV or V of the Protocol on Elimination. Support structures, associated with the missiles and launchers subject to this Treaty, that are subject to elimination shall be eliminated *in situ*.

(5) Each Party shall have the right, during the first six months after entry into force of this Treaty, to eliminate by means of launching no more than 100 of its intermediate-range missiles.

(6) Intermediate-range and shorter-range missiles which have been tested prior to entry into

force of this Treaty, but never deployed, and which are not existing types of intermediate-range or shorter-range missiles listed in Article III of this Treaty, and launchers of such missiles, shall be eliminated within six months after entry into force of this Treaty in accordance with the procedures set forth in the Protocol on Elimination. Such missiles are:

(a) for the United States of America, missiles of the type designated by the United States of America as Pershing IB, which is known to the Union of Soviet Socialist Republics by the same designation; and

(b) for the Union of Soviet Socialist Republics, missiles of the type designated by the Union of Soviet Socialist Republics as the RK-55, which is known to the United States of America as the SSC-X-4.

(7) Intermediate-range and shorter-range missiles and launchers of such missiles and support structures and support equipment associated with such missiles and launchers shall be considered to be eliminated after completion of the procedures set forth in the Protocol on Elimination and upon the notification provided for in paragraph 5(e) of Article IX of this Treaty.

(8) Each Party shall eliminate its deployment areas, missile operating bases and missile support facilities. A Party shall notify the other Party pursuant to paragraph 5(a) of Article IX of this Treaty once the conditions set forth below are fulfilled:

(a) all intermediate-range and shorter-range missiles, launchers of such missiles and support equipment associated with such missiles and launchers located there have been removed;

(b) all support structures associated with such missiles and launchers located there have been eliminated; and

(c) all activity related to production, flight-testing, training, repair, storage or deployment of such missiles and launchers has ceased there.

Such deployment areas, missile operating bases and missile support facilities shall be considered to be eliminated either when they have been inspected pursuant to paragraph 4 of Article XI of this Treaty or when 60 days have elapsed since the date of the scheduled elimination which was notified pursuant to paragraph 5(a) of Article IX of this Treaty. A deployment area, missile operating base

or missile support facility listed in the Memorandum of Understanding that met the above conditions prior to entry into force of this Treaty, and is not included in the initial data exchange pursuant to paragraph 3 of Article IX of this Treaty, shall be considered to be eliminated.

(9) If a Party intends to convert a missile operating base listed in the Memorandum of Understanding for use as a base associated with GLBM or GLCM systems not subject to this Treaty, then that Party shall notify the other Party, no less than 30 days in advance of the scheduled date of the initiation of the conversion, of the scheduled date and the purpose for which the base will be converted.

ARTICLE XI

(1) For the purpose of ensuring verification of compliance with the provisions of this Treaty, each Party shall have the right to conduct on-site inspections. The Parties shall implement on-site inspections in accordance with this Article, the Protocol on inspection and the Protocol on Elimination.

(2) Each Party shall have the right to conduct inspections provided for by this Article both within the territory of the other Party and within the territories of basing countries.

(3) Beginning 30 days after entry into force of this Treaty, each Party shall have the right to conduct inspections at all missile operating bases and missile support facilities specified in the Memorandum of Understanding other than missile production facilities, and at all elimination facilities included in the initial data update required by paragraph 3 of Article IX of this Treaty. These inspections shall be completed no later than 90 days after entry into force of this Treaty. The purpose of these inspections shall be to verify the number of missiles, launchers, support structures and support equipment and other data, as of the date of entry into force of this Treaty, provided pursuant to paragraph 3 of Article IX of this Treaty.

(4) Each Party shall have the right to conduct inspections to verify the elimination, notified pursuant to paragraph 5(a) of Article IX of this Treaty, of missile operating bases and missile support facilities other than missile production facilities, which are thus no longer subject to inspections pursuant to paragraph 5(a) of this Article. Such an inspection shall be carried out within 60 days after the scheduled date of elimination of that facility. If a

Party conducts an inspection at a particular facility pursuant to paragraph 3 of this Article after the scheduled date of the elimination of that facility, then no additional inspections of that facility pursuant to this paragraph shall be permitted.

(5) Each Party shall have the right to conduct inspections pursuant to this paragraph for 13 years after the entry into force of this Treaty. Each Party shall have the right to conduct 20 such inspections per calendar year during the first three years after entry into force of this Treaty, 15 such inspections per calendar year during the subsequent five years, and ten such inspections per calendar year during the last five years. Neither Party shall use more than half of its total number of these inspections per calendar year within the territory of any one basing country. Each Party shall have the right to conduct:

(a) inspections, beginning 90 days after entry into force of this Treaty, of missile operating bases and missile support facilities other than elimination facilities and missile production facilities, to ascertain, according to the categories of data specified on the Memorandum of Understanding, the number of missiles, launchers, support structures and support equipment located at each missile operating base or missile support facility at the time of the inspection; and

(b) inspections of former missile operating bases and former missile support facilities eliminated pursuant to paragraph 8 of Article X of this Treaty other than former missile production facilities.

(6) Beginning 30 days after entry into force of this Treaty, each Party shall have the right, for 13 years after entry into force of this Treaty, to inspect by means of continuous monitoring:

(a) the portals of any facility of the other Party at which the final assembly of GLBM using stages, any of which is outwardly similar to a stage of a solid-propellant GLBM listed in Article III of this Treaty, is accomplished; or

(b) if a Party has no such facility, the portals of an agreed former missile production facility at which existing types of intermediate-range or shorter-range GLBMs were produced.

The Party whose facility is to be inspected pursuant to this paragraph shall ensure that the other Party is able to establish a permanent continuous monitoring system at that facility within six months after entry into force of this Treaty or within six months of initiation of the process of final assembly described in subparagraph (a). If, after the end of the

second year after entry into force of this Treaty, neither Party conducts the process of final assembly described in subparagraph (a) for a period of 12 consecutive months, then neither Party shall have the right to inspect by means of continuous monitoring any missile production facility of the other Party unless the process of final assembly described in subparagraph (a) is initiated again. Upon entry into force of this Treaty, the facilities to be inspected by continuous monitoring shall be: in accordance with subparagraph (b), for the United States of America, Hercules Plant Number 1, at Magna, Utah; in accordance with subparagraph (a), for the Union of Soviet Socialist Republics, the Votkinsk Machine Building Plant, Udmurt Autonomous Soviet Socialist Republic, Russian Soviet Federative Socialist Republic.

(7) Each Party shall conduct inspections of the process of elimination, including elimination of intermediate-range missiles by means of launching, of intermediate-range and shorter-range missiles and launchers of such missiles and support equipment associated with such missiles and launchers carried out at elimination facilities in accordance with Article X of this Treaty and the Protocol on Elimination. Inspectors conducting inspections provided for in this paragraph shall determine that the processes specified for the elimination of the missiles, launchers and support equipment have been completed.

(8) Each Party shall have the right to conduct inspections to confirm the completion of the process of elimination of intermediate-range and shorter-range missiles and launchers of such missiles and support equipment associated with such missiles and launchers eliminated pursuant to Section V of the Protocol on Elimination, and of training missiles, training missile stages, training launch canisters and training launchers eliminated pursuant to Sections II, IV and V of the Protocol on Elimination.

ARTICLE XII

(1) For the purpose of ensuring verification of compliance with the provisions of this Treaty, each Party shall use national technical means of verification at its disposal in a manner consistent with generally recognized principles of international law.

(2) Neither Party shall:

(a) interfere with the national technical means

of verification of the other Party operating in accordance with paragraph 1 of this Article; or

(b) use concealment measures which impede verification of compliance with the provisions of this Treaty by national technical means of verification carried out in accordance with paragraph 1 of this Article. This obligation does not apply to cover or concealment practices, within a deployment area, associated with normal training, maintenance and operations, including the use of environmental shelters to protect missiles and launchers.

(3) To enhance observation by national technical means of verification, each Party shall have the right until a treaty between the Parties reducing and limiting strategic offensive arms enters into force, but in any event for no more than three years after entry into force of this Treaty, to request the implementation of co-operative measures at deployment bases for road-mobile GLBMs with a range capability in excess of 5500 kilometers, which are not former missile operating bases eliminated pursuant to paragraph 8 of Article X of this Treaty. The Party making such a request shall inform the other Party of the deployment base at which co-operative measures shall be implemented. The Party whose base is to be observed shall carry out the following co-operative measures:

(a) no later than six hours after such a request, the Party shall have opened the roofs of all fixed structures for launchers located at the base, removed completely all missiles on launchers from such fixed structures for launchers and displayed such missiles on launchers in the open without using concealment measures; and

(b) the Party shall leave the roofs open and the missiles on launchers in place until twelve hours have elapsed from the time of the receipt of a request for such an observation.

Each Party shall have the right to make six such requests per calendar year. Only one deployment base shall be subject to these co-operative measures at any one time.

ARTICLE XIII

(1) To promote the objectives and implementation of the provisions of this Treaty, the Parties hereby establish the Special Verification Commission. The Parties agree that, if either Party so requests, they shall meet within the framework of

the Special Verification Commission to:

(a) resolve questions relating to compliance with the obligations assumed; and

(b) agree upon such measures as may be necessary to improve the viability and effectiveness of this Treaty.

(2) The Parties shall use the Nuclear Risk Reduction Centres, which provide for continuous communication between the Parties, to:

(a) exchange data and provide notifications as required by paragraphs 3, 4, 5 and 6 of Article IX of this Treaty and the Protocol on Elimination;

(b) provide and receive the information required by paragraph 9 of Article X of this Treaty;

(c) provide and receive notifications of inspections as required by Article XI of this Treaty and the Protocol on Inspection; and

(d) provide and receive requests for co-operative measures as provided for in paragraph 3 of Article XII of this Treaty.

ARTICLE XIV

The Parties shall comply with this Treaty and shall not assume any international obligations or undertakings which would conflict with its provisions.

ARTICLE XV

(1) This Treaty shall be of unlimited duration.

(2) Each 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 jeopardized its supreme interests. It shall give notice of its decision to withdraw to the other Party six months prior to withdrawal from this Treaty. Such notice shall include a statement of the extraordinary events the notifying Party regards as having jeopardized its supreme interests.

THE INSPECTION PROTOCOL

Pursuant to and in implementation of the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Elimination of Their Intermediate-Range and Shorter-Range Missiles of December 8 1987, hereinafter referred to as the Treaty, the Parties hereby agree upon procedures governing the conduct of inspections provided for in Article XI of the Treaty.

I. Definitions

For the purpose of this Protocol, the Treaty, the Memorandum of Understanding and the Protocol on Elimination:

(1) The term "inspected Party" means the Party to the Treaty whose sites are subject to inspection as provided for by Article XI of the Treaty.

(2) The term "inspecting Party" means the Party to the Treaty carrying out an inspection.

(3) The term "inspector" means an individual designated by one of the Parties to carry out inspections and included on that Party's list of inspectors in accordance with the provisions of Section III of this Protocol.

(4) The term "inspection team" means a group of inspectors assigned by the inspecting Party to conduct a particular inspection.

(5) The term "inspection site" means an area, location or facility at which an inspection is carried out.

(6) The term "period of inspection" means the period of time from arrival of the inspection team at the inspection site until its departure from the inspection site, exclusive of time spent on any pre- and post-inspection procedures.

(7) The term "point of entry" means: Washington, D.C., or San Francisco, California, the United States of America; Brussels (National Airport), The Kingdom of Belgium; Frankfurt (Rhein Main Airbase), The Federal Republic of Germany; Rome (Ciampino), The Republic of Italy; Schiphol, The Kingdom of the Netherlands; RAF Greenham Common, The United Kingdom of Great Britain and Northern Ireland; Moscow, or Irkutsk, the Union of Soviet Socialist Republics; Schkeuditz Airport, the German Democratic Republic; and International Airport Ruzhice, the Czechoslovak Socialist Republic.

(8) The term "in-country period" means the period from the arrival of the inspection team at the point of entry until its departure from the country through the point of entry.

(9) The term "in-country escort" means individuals specified by the inspected Party to accompany and assist inspectors and aircrew members as necessary throughout the in-country period.

(10) The term "aircrew-member" means an individual who performs duties related to the operation

of an airplane and who is included on a Party's list of aircrew members in accordance with the provisions of Section III of this Protocol.

II. General obligations

(1) For the purpose of ensuring verification of compliance with the provisions of the Treaty, each Party shall facilitate inspection by the other Party pursuant to this Protocol.

(2) Each Party takes note of the assurance received from the other Party regarding understandings reached between the other Party and the basing countries to the effect that the basing countries have agreed to the conduct of inspections, in accordance with the provisions of this Protocol, on their territories.

III. Pre-inspection requirements

(1) Inspections to ensure verification of compliance by the Parties with the obligations assumed under the Treaty shall be carried out by inspectors designated in accordance with paragraphs 3 and 4 of this Section.

(2) No later than one day after entry into force of the Treaty, each Party shall provide to the other Party: a list of its proposed aircrew members; a list of its proposed inspectors who will carry out inspections pursuant to paragraphs 3, 4, 5, 7 and 8 of Article XI of the Treaty; and a list of its proposed inspectors who will carry out inspection activities pursuant to paragraph 6 of Article XI of the Treaty. None of these lists shall contain at any time more than 200 individuals.

(3) Each Party shall review the lists of inspectors and aircrew members proposed by the other Party. With respect to an individual included on the list of proposed inspectors who will carry out inspection activities pursuant to paragraph 6 of Article XI of the Treaty, if such an individual is unacceptable to the Party reviewing the list, that Party shall, within 20 days, so inform the Party providing the list, and the individual shall be deemed not accepted and shall be deleted from the list. With respect to an individual on the list of proposed aircrew members or the list of proposed inspectors who will carry out inspections pursuant to paragraphs 3, 4, 5, 7 and 8 of Article XI of the Treaty, each Party, within 20 days after the

receipt of such lists, shall inform the other Party of its agreement to the designation of each inspector and aircrew member proposed. Inspectors shall be citizens of the inspecting Party.

(4) Each Party shall have the right to amend its lists of inspectors and aircrew members. New inspectors and aircrew members shall be designated in the same manner as set forth in paragraph 3 of this Section with respect to the initial lists.

(5) Within 30 days of receipt of the initial lists of inspectors and aircrew members, or of subsequent changes thereto, the Party receiving such information shall provide, or shall ensure provision of, such visas and other documents to each individual to whom it has agreed as may be required to ensure that each inspector or aircrew member may enter and remain in the territory of the Party or basing country in which an inspection site is located throughout the in-country period for the purpose of carrying out inspection activities in accordance with the provisions of this Protocol. Such visas and documents shall be valid for a period of at least 24 months.

(6) To exercise their functions effectively, inspectors and aircrew members shall be accorded, throughout the in-country period, privileges and immunities in the country of the inspection site as set forth in the Annex to this Protocol.

(7) Without prejudice to their privileges and immunities, inspectors and aircrew members shall be obliged to respect the laws and regulations of the State on whose territory an inspection is carried out and shall be obliged not to interfere in the internal affairs of that State. In the event the inspected Party determines that an inspector or aircrew member of the other Party has violated the conditions governing inspection activities set forth in this Protocol, or has ever committed a criminal offence on the territory of the inspected Party or a basing country, or has ever been sentenced for committing a criminal offence or expelled by the inspected Party or a basing country, the inspected Party making such a determination shall so notify the inspecting Party, which shall immediately strike the individual from the list of inspectors or the list of aircrew members. If, at that time, the individual is on the territory of the inspected Party or a basing country, the inspecting Party shall immediately remove that individual from the country.

(8) Within 30 days after entry into force of the Treaty, each Party shall inform the other Party of the standing diplomatic clearance number for airplanes of the Party transporting inspectors and equipment necessary for inspection into and out of the territory of the Party or basing country in which an inspection site is located. Aircraft routings to and from the designated point of entry shall be along established international airways that are agreed upon by the Parties as the basis for such diplomatic clearance.

IV. Notifications

(1) Notifications of an intention to conduct an inspection shall be made through the Nuclear Risk Reduction Centres. The receipt of this notification shall be acknowledged through the Nuclear Risk Reduction Centres by the inspected Party within one hour of its receipt.

(a) For inspections conducted pursuant to paragraphs 3, 4 or 5 of Article XI of the Treaty, such notifications shall be made no less than 16 hours in advance of the estimated time of arrival of the inspection team at the point of entry and shall include:

- (i) the point of entry;
- (ii) the date and estimated time of arrival at the point of entry;
- (iii) the date and time when the specification of the inspection site will be provided; and
- (iv) the names of inspectors and aircrew members.

(b) For inspections conducted pursuant to paragraphs 7 or 8 of Article XI of the Treaty, such notifications shall be made no less than 72 hours in advance of the estimated time of arrival of the inspection team at the point of entry and shall include:

- (i) the point of entry;
- (ii) the date and estimated time of arrival at the point of entry;
- (iii) the site to be inspected and the type of inspection; and
- (iv) the names of inspectors and aircrew members.

(2) The date and time of the specification of the inspection site as notified pursuant to paragraph 1(a) of this Section shall fall within the following time intervals:

- (a) for inspections conducted pursuant to para-

graphs 4 and 5 of Article XI of the Treaty, neither less than four hours nor more than 24 hours after the estimated date and time of arrival at the point of entry; and

(b) for inspections conducted pursuant to paragraph 3 of Article XI of the Treaty, neither less than four hours nor more than 48 hours after the estimated date and time of arrival at the point of entry.

(3) The inspecting Party shall provide the inspected Party with a flight plan, through the Nuclear Risk Reduction Centres, for its flight from the last airfield prior to entering the airspace of the country in which the inspection site is located to the point of entry, no less than six hours before the scheduled departure time from the airfield. Such a plan shall be filed in accordance with the procedures of the International Civil Aviation Organization applicable to civil aircraft. The inspecting Party shall include in the remarks section of each flight plan the standing diplomatic clearance number and the notation: "Inspection aircraft. Priority clearance processing required."

(4) No less than three hours prior to the scheduled departure of the inspection team from the last airfield prior to entering the airspace of the country in which the inspection is to take place, the inspected Party shall ensure that the flight plan filed in accordance with paragraph 3 of this Section is approved so that the inspection team may arrive at the point of entry by the estimated arrival time.

(5) Either Party may change the point or points of entry to the territories of the countries within which its deployment areas, missile operating bases or missile support facilities are located, by giving notice of such change to the other Party. A change in a point of entry shall become effective five months after receipt of such notification by the other Party.

V. Activities beginning upon arrival at the point of entry

(1) The in-country escort and a diplomatic aircrew escort accredited to the Government of either the inspected Party or the basing country in which the inspection site is located shall meet the inspection team and aircrew members at the point of entry as soon as the airplane of the inspecting Party lands. The number of aircrew members for each airplane shall not exceed ten. The in-country escort shall expedite the entry of the inspection team and air-

crew, their baggage, and equipment and supplies necessary for inspection, into the country in which the inspection site is located. A diplomatic aircrew escort shall have the right to accompany and assist aircrew members throughout the in-country period. In the case of an inspection taking place on the territory of a basing country, the in-country escort may include representatives of that basing country.

(2) An inspector shall be considered to have assumed his duties upon arrival at the point of entry on the territory of the inspected Party or a basing country, and shall be considered to have ceased performing those duties when he has left the territory of the inspected Party or basing country.

(3) Each Party shall ensure that equipment and supplies are exempt from all customs duties.

(4) Equipment and supplies which the inspecting Party brings into the country in which an inspection site is located shall be subject to examination at the point of entry each time they are brought into that country. This examination shall be completed prior to the departure of the inspection team from the point of entry to conduct an inspection. Such equipment and supplies shall be examined by the in-country escort in the presence of the inspection team members to ascertain to the satisfaction of each Party that the equipment and supplies cannot perform functions unconnected with the inspection requirements of the Treaty. If it is established upon examination that the equipment or supplies are unconnected with these inspection requirements, then they shall not be cleared for use and shall be impounded at the point of entry until the departure of the inspection team from the country where the inspection is conducted. Storage of the inspecting Party's equipment and supplies at each point of entry shall be within tamper-proof containers within a secure facility. Access to each secure facility shall be controlled by a "dual key" system requiring the presence of both Parties to gain access to the equipment and supplies.

(5) Throughout the in-country period, the inspected Party shall provide, or arrange for the provision of, meals, lodging, work space, transportation and, as necessary, medical care for the inspection team and aircrew of the inspecting Party. All the costs in connection with the stay of inspectors carrying out inspection activities pur-

suant to paragraph 6 of Article XI of the Treaty, on the territory of the inspected Party, including meals, services, lodging, work space, transportation and medical care shall be borne by the inspecting Party.

(6) The inspected Party shall provide parking, security protection, servicing and fuel for the airplane of the inspecting Party at the point of entry. The inspecting Party shall bear the cost of such fuel and servicing.

(7) For inspections conducted on the territory of the Parties, the inspection team shall enter at the point of entry on the territory of the inspected Party that is closest to the inspection site. In the case of inspections carried out in accordance with paragraphs 3, 4 or 5 of Article XI of the Treaty, the inspection team leader shall, at or before the time notified pursuant to paragraph 1(a) (iii) of Section IV of this Protocol, inform the inspected Party at the point of entry through the in-country escort of the type of inspection and the inspection site, by place-name and geographic co-ordinates.

VI. General rules for conducting inspections

(1) Inspectors shall discharge their functions in accordance with this Protocol.

(2) Inspectors shall not disclose information received during inspections except with the express permission of the inspecting Party. They shall remain bound by this obligation after their assignment as inspectors has ended.

(3) In discharging their functions, inspectors shall not interfere directly with on-going activities at the inspection site and shall avoid unnecessarily hampering or delaying the operation of a facility or taking actions affecting its safe operation.

(4) Inspections shall be conducted in accordance with the objectives set forth in Article XI of the Treaty as applicable for the type of inspection specified by the inspecting Party under paragraph 1(b) of Section IV or paragraph 7 of Section V of this Protocol.

(5) The in-country escort shall have the right to accompany and assist inspectors and aircrew members as considered necessary by the inspected Party throughout the in-country period. Except as otherwise provided in this Protocol, the

movement and travel of inspectors and aircrew members shall be at the discretion of the in-country escort.

(6) Inspectors carrying out inspection activities pursuant to paragraph 6 of Article XI of the Treaty shall be allowed to travel within 50 kilometers from the inspection site with the permission of the in-country escort, and as considered necessary by the inspected Party, shall be accompanied by the in-country escort. Such travel shall be taken solely as a leisure activity.

(7) Inspectors shall have the right throughout the period of inspection to be in communication with the embassy of the inspecting Party located within the territory of the country where the inspection is taking place using the telephone communications provided by the inspected Party.

(8) At the inspection site, representatives of the inspected facility shall be included among the in-country escort.

(9) The inspection team may bring on to the inspection site such documents as needed to conduct the inspection, as well as linear measurement devices; cameras; portable weighing devices; radiation detection devices; and other equipment, as agreed by the Parties. The characteristics and method of use of the equipment listed above, shall also be agreed upon within 30 days after entry into force of the Treaty. During inspections conducted pursuant to paragraphs 3, 4, 5(a), 7 or 8 of Article XI of the Treaty, the inspection team may use any of the equipment listed above, except for cameras, which shall be for use only by the inspected Party at the request of the inspecting Party. During inspections conducted pursuant to paragraph 5(b) of Article XI of the Treaty, all measurements shall be made by the inspected Party at the request of the inspecting Party. At the request of inspectors, the in-country escort shall take photographs of the inspected facilities using the inspecting Party's camera systems which are capable of producing duplicate, instant development photographic prints. Each Party shall receive one copy of every photograph.

(10) For inspections conducted pursuant to paragraphs 3, 4, 5, 7 or 8 of Article XI of the Treaty, inspectors shall permit the in-country escort to observe the equipment used during the inspection by the inspection team.

(11) Measurements recorded during inspec-

tions shall be certified by the signature of a member of the inspection team and a member of the in-country escort when they are taken. Such certified data shall be included in the inspection.

(12) 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 in-country escort. The in-country escort shall provide the inspection team, during the inspection, with such clarifications as may be necessary to remove the ambiguity. In the event questions relating to an object or building located within the inspection site are not resolved, the inspected Party shall photograph the object or building as requested by the inspecting Party for the purpose of clarifying its nature and function. If the ambiguity cannot be removed during the inspection, then the question, relevant clarifications and a copy of any photographs taken shall be included in the inspection report.

(13) In carrying out their activities, inspectors shall observe safety regulations established at the inspection site, including those for the protection of controlled environments within a facility and for personal safety. Individual protective clothing and equipment shall be provided by the inspected Party, as necessary.

(14) For inspections pursuant to paragraphs 3, 4, 5, 7 or 8 of Article XI of the Treaty, pre-inspection procedures, including briefings and safety-related activities, shall begin upon arrival of the inspection team at the inspection site and shall be completed within one hour. The inspection team shall begin the inspection immediately upon completion of the pre-inspection procedures. The period of inspection shall not exceed 24 hours, except for inspections pursuant to paragraphs 6, 7 or 8 of Article XI of the Treaty. The period of inspection may be extended, by agreement with the in-country escort, by no more than eight hours. Post-inspection procedures, which include completing the inspection report in accordance with the provisions of Section XI of this Protocol, shall begin immediately upon completion of the inspection and shall be completed at the inspection site within four hours.

(15) An inspection team conducting an inspection pursuant to Article XI of the Treaty shall include no more than ten inspectors, except for an inspection team conducting an inspection pursuant to paragraphs 7 and 8 of that Article, which

shall include no more than 20 inspectors and an inspection team conducting inspection activities pursuant to paragraph 6 of that Article, which shall include no more than 30 inspectors. At least two inspectors on each team must speak the language of the inspected Party. An inspection team shall operate under the direction of the team leader. Upon arrival at the inspection site, the inspection team may divide itself into subgroups consisting of no fewer than two inspectors each. There shall be no more than one inspection team at an inspection site at any one time.

(16) Except in the case of inspections conducted pursuant to paragraphs 3, 4, 7 or 8 of Article XI of the Treaty, upon completion of the post-inspection procedures, the inspection team shall return promptly to the point of entry from which it commenced inspection activities and shall then leave, within 24 hours, the territory of the country in which the inspection site is located, using its own airplane. In the case of inspections conducted pursuant to paragraphs 3, 4, 7 or 8 of Article XI of the Treaty, if the inspection team intends to conduct another inspection it shall either:

(a) notify the inspected Party of its intent upon return to the point of entry; or

(b) notify the inspected Party of the type of inspection and the inspection site upon completion of the post-inspection procedures. In this case it shall be the responsibility of the inspected Party to ensure that the inspection team reaches the next inspection site without unjustified delay. The inspected Party shall determine the means of transportation and route involved in such travel.

With respect to subparagraph (a), the procedures set forth in paragraph 7 of Section V of this Protocol and paragraphs 1 and 2 of Section VII of this Protocol shall apply.

VII. Inspections conducted pursuant to paragraphs 3, 4 or 5 of Article XI of the Treaty

(1) Within one hour after the time for the specification of the inspection site notified pursuant to paragraph 1(a) of Section IV of this Protocol, the inspected Party shall implement pre-inspection movement restrictions at the inspection site, which shall remain in effect until the inspection team arrives at the inspection site. During the period

that pre-inspection movement restrictions are in effect, missiles, stages of such missiles, launchers or support equipment subject to the Treaty shall not be removed from the inspection site.

(2) The inspected Party shall transport the inspection team from the point of entry to the inspection site so that the inspection team arrives at the inspection site no later than nine hours after the time for the specification of the inspection site notified pursuant to paragraph 1(a) of Section IV of this Protocol.

(3) In the event that an inspection is conducted in a basing country, the aircrew of the inspected Party may include representatives of the basing country.

(4) Neither Party shall conduct more than one inspection pursuant to paragraph 5(a) of Article XI of the Treaty at any one time, more than one inspection pursuant to paragraph 5(b) of Article XI of the Treaty at any one time, or more than 10 inspections pursuant to paragraph 3 of Article XI of the Treaty at any one time.

(5) The boundaries of the inspection site at the facility to be inspected shall be the boundaries of that facility set forth in the Memorandum of Understanding.

(6) Except in the case of an inspection pursuant to paragraphs 4 and 5(b) of Article XI of the Treaty, upon the arrival of the inspection team at the inspection site, the in-country escort shall inform the inspection team leader of the number of missiles, stages of missiles, launchers, support structures and support equipment at the site that are subject to the Treaty and provide the inspection team leader with a diagram of the inspection site indicating the location of these missiles, stages of missiles, launchers, support structures and support equipment at the inspection site.

(7) Subject to the procedures of paragraphs 8 through 14 of this Section, inspectors shall have the right to inspect the entire inspection site, including the interior of structures, containers or vehicles, or including covered objects, whose dimensions are equal to or greater than the dimensions specified in Section VI of the Memorandum of Understanding for the missiles, stages of such missiles, launchers or support equipment of the inspected Party.

(8) A missile, a stage of such a missile or a launcher subject to the Treaty shall be subject to inspection only by external visual observation,

including measuring, as necessary, the dimensions of such a missile, stage of such a missile or launcher. A container that the inspected Party declares to contain a missile or stage of a missile subject to the Treaty, and which is not sufficiently large to be capable of containing more than one missile or stage of such a missile of the inspected Party subject to the Treaty, shall be subject to inspection only by external visual observation, including measuring, as necessary, the dimensions of such a container to confirm that it cannot contain more than one missile or stage of such a missile of the inspected Party subject to the Treaty. Except as provided for in paragraph 14 of this Section, a container that is sufficiently large to contain a missile or stage of such a missile of the inspected Party subject to the Treaty that the inspected Party declares not to contain a missile or stage of such a missile subject to the Treaty shall be subject to inspection only by means of weighing or visual observation of the interior of the container, as necessary, to confirm that it does not, in fact, contain a missile or stage of such a missile of the inspected Party subject to the Treaty. If such a container is a launch canister associated with a type of missile not subject to the Treaty, and declared by the inspected Party to contain such a missile, it shall be subject to external inspection only, including use of radiation detection devices, visual observation and linear measurement, as necessary, of the dimensions of such a canister.

(9) A structure or container that is not sufficiently large to contain a missile, stage of such a missile or launcher of the inspected Party subject to the Treaty shall be subject to inspection only by external visual observation including measuring, as necessary, the dimensions of such a structure or container to confirm that it is not sufficiently large to be capable of containing a missile, stage of such a missile or launcher of the inspected Party subject to the Treaty.

(10) Within a structure, a space which is sufficiently large to contain a missile, stage of such a missile or launcher of the inspected Party subject to the Treaty, but which is demonstrated to the satisfaction of the inspection team not to be accessible by the smallest missile, stage of a missile or launcher of the inspected Party subject to the Treaty shall not be subject to further inspection. If the inspected Party demonstrates to the satisfaction of the inspection team by means of a visual

inspection of the interior of an enclosed space from its entrance that the enclosed space does not contain any missile, stage of such a missile or launcher of the inspected Party subject to the Treaty, such an enclosed space shall not be subject to further inspection.

(11) The inspection team shall be permitted to patrol the perimeter of the inspection site and station inspectors at the exits of the site for the duration of the inspection.

(12) The inspection team shall be permitted to inspect any vehicle capable of carrying missiles, stages of such missiles, launchers or support equipment of the inspected Party subject to the Treaty at any time during the course of an inspection and no such vehicle shall leave the inspection site during the course of the inspection until inspected at site exits by the inspection team.

(13) Prior to inspection of a building within the inspection site, the inspection team may station subgroups at the exits of the building that are large enough to permit passage of any missile, stage of such a missile, launcher or support equipment of the inspected Party subject to the Treaty. During the time that the building is being inspected, no vehicle or object capable of containing any missile, stage of such a missile, launcher or support equipment of the inspected Party subject to the Treaty, shall be permitted to leave the building until inspected.

(14) During an inspection conducted pursuant to paragraph 5 (b) of Article XI of the Treaty, it shall be the responsibility of the inspected Party to demonstrate that a shrouded or environmentally protected object which is equal to or larger than the smallest missile, stage of a missile or launcher of the inspected Party subject to the Treaty is not, in fact, a missile, stage of such a missile or launcher of the inspected Party subject to the Treaty. This may be accomplished by partial removal of the shroud or environmental protection cover, measuring, or weighing the covered object or by other methods. If the inspected Party satisfies the inspection team by its demonstration that the object is not a missile, stage of such a missile or launcher of the inspected Party subject to the Treaty, then there shall be no further inspection of that object. If the container is a launch canister associated with a type of missile not subject to the Treaty, and declared by the inspected Party to contain such a missile, then it shall be subject to external inspection

only, including use of radiation detection devices, visual observation and linear measurement, as necessary, of the dimensions of such a canister.

VIII. Inspections Conducted Pursuant to Paragraphs 7 or 8 of Article XI of the Treaty

(1) Inspections of the process of elimination of items of missile systems specified in the Protocol on Elimination carried out pursuant to paragraph 7 of Article XI of the Treaty shall be conducted in accordance with the procedures set forth in this paragraph and the Protocol on Elimination.

(a) Upon arrival at the elimination facility, inspectors shall be provided with a schedule of elimination activities.

(b) Inspectors shall check the data which are specified in the notification provided by the inspected Party regarding the number and type of items of missile systems to be eliminated against the number and type of such items which are at the elimination facility prior to the initiation of the elimination procedures.

(c) Subject to paragraphs 3 and 11 of Section VI of this Protocol, inspectors shall observe the execution of the specific procedures for the elimination of the items of missile systems as provided for in the Protocol on Elimination. If any deviations from the agreed elimination procedures are found, the inspectors shall have the right to call the attention of the in-country escort to the need for strict compliance with the above-mentioned procedures. The completion of such procedures shall be confirmed in accordance with the procedures specified in the Protocol on Elimination.

(d) During the elimination of missiles by means of launching, the inspectors shall have the right to ascertain by visual observation that a missile prepared for launch is a missile of the type subject to elimination. The inspectors shall also be allowed to observe such a missile from a safe location specified by the inspected Party until the completion of its launch. During the inspection of a series of launches for the elimination of missiles by means of launching, the inspected Party shall determine the means of transport and route for the transportation of inspectors between inspection sites.

(2) Inspections of the elimination of items of missile systems specified in the Protocol on Elimination

nation carried out pursuant to paragraph 8 of Article XI of the Treaty shall be conducted in accordance with the procedures set forth in Sections II, IV or V of the Protocol on Elimination or as otherwise agreed by the Parties.

IX. Inspection Activities Conducted Pursuant to Paragraph 6 of Article XI of the Treaty

(1) The inspected Party shall maintain an agreed perimeter around the periphery of the inspection site and shall designate a portal with not more than one rail line and one road which shall be within 50 metres of each other. All vehicles which can contain an intermediate-range GLBM or longest stage of such a GLBM of the inspected Party shall exit only through this portal.

(2) For the purposes of this Section, the provisions of paragraph 10 of Article VII of the Treaty shall be applied to intermediate-range GLBMs of the inspected Party and the longest stage of such GLBMs.

(3) There shall not be more than two other exits from the inspection site. Such exits shall be monitored by appropriate sensors. The perimeter of and exits from the inspection site may be monitored as provided for by paragraph 11 of Section VII of this Protocol.

(4) The inspecting Party shall have the right to establish continuous monitoring systems at the portal specified in paragraph 1 of this Section and appropriate sensors at the exits specified in paragraph 3 of this Section and carry out necessary engineering surveys, construction, repair and replacement of monitoring.

(5) The inspected Party shall, at the request of and at the expense of the inspecting Party, provide the following:

(a) all necessary utilities for the construction and operation of the monitoring systems, including electrical power, water, fuel, heating and sewage;

(b) basic construction materials including concrete and lumber;

(c) the site preparation necessary to accommodate the installation of continuously operating systems for monitoring the portal specified in paragraph 1 of this Section, appropriate sensors for other exits specified in paragraph 3 of this Section and the centre for collecting data obtained during inspections. Such preparation may include ground excavation, laying of concrete founda-

tions, trenching between equipment locations and utility connections;

(d) transportation for necessary installation tools, materials and equipment from the point of entry to the inspection site; and

(e) a minimum of two telephone lines and, as necessary, high frequency radio equipment capable of allowing direct communication with the embassy of the inspecting Party in the country in which the site is located.

(6) Outside the perimeter of the inspection site, the inspecting Party shall have the right to:

(a) build no more than three buildings with a total floor space of not more than 150 square meters for a data centre and inspection team headquarters, and one additional building with floor space not to exceed 500 square meters for the storage of supplies and equipment;

(b) install systems to monitor the exits to include weight sensors, vehicle sensors, surveillance systems and vehicle dimensional measuring equipment;

(c) install at the portal specified in paragraph 1 of this Section equipment for measuring the length and diameter of missile stages contained inside of launch canisters or shipping containers;

(d) install at the portal specified in paragraph 1 of this Section non-damaging image producing equipment for imaging the contents of launch canisters or shipping containers declared to contain missiles or missile stages as provided for in paragraph 11 of this Section.

(e) install a primary and back-up power source; and

(f) use, as necessary, data authentication devices.

(7) During the installation or operation of the monitoring systems, the inspecting Party shall not deny the inspected Party access to any existing structures or security systems. The inspecting Party shall not take any actions with respect to such structures without consent of the inspected Party. If the Parties agree that such structures are to be rebuilt or demolished, either partially or completely, the inspecting Party shall provide the necessary compensation.

(8) The inspected Party shall not interfere with the installed equipment or restrict the access of the inspection team to such equipment.

(9) The inspecting Party shall have the right to use its own two-way systems of radio communica-

tion between inspectors patrolling the perimeter and the data collection centre. Such systems shall conform to power and frequency restrictions established on the territory of the inspected Party.

(10) Aircraft shall not be permitted to land within the perimeter of the monitored site except for emergencies at the site and with prior notification to the inspection team.

(11) Any shipment exiting through the portal specified in paragraph 1 of this Section which is large enough and heavy enough to contain an intermediate-range GLBM or longest stage of such a GLBM of the inspected Party shall be declared by the inspected Party to the inspection team before the shipment arrives at the portal. The declaration shall state whether such a shipment contains a missile or missile stage as large or larger than and as heavy or heavier than an intermediate-range GLBM or longest stage of such a GLBM of the inspected Party.

(12) The inspection team shall have the right to weigh and measure the dimensions of any vehicle, including railcars, exiting the site to ascertain whether it is large enough and heavy enough to contain an intermediate-range GLBM or longest stage of such a GLBM of the inspected Party. These measurements shall be performed so as to minimize the delay of vehicles exiting the site. Vehicles that are either not large enough or not heavy enough to contain an intermediate-range GLBM or longest stage of such a GLBM of the inspected Party shall not be subject to further inspection.

(13) Vehicles exiting through the portal specified in paragraph 1 of this Section that are large enough and heavy enough to contain an intermediate-range GLBM or longest stage of such a GLBM of the inspected Party but that are declared not to contain a missile or missile stage as large or larger than and as heavy or heavier than an intermediate-range GLBM or longest stage of such a GLBM of the inspected Party shall be subject to the following procedures:

(a) The inspecting Party shall have the right to inspect the interior of all such vehicles.

(b) If the inspecting Party can determine by visual observation or dimensional measurement that, inside a particular vehicle, there are no containers or shrouded objects large enough to be or to contain an intermediate-range GLBM or longest stage of such a GLBM of the inspected Party, then

that vehicle shall not be subject to further inspection.

(c) If inside a vehicle there are one or more containers or shrouded objects large enough to be or to contain an intermediate-range GLBM or longest stage of such a GLBM of the inspected Party, it shall be the responsibility of the inspected Party to demonstrate that such containers or shrouded objects are not and do not contain intermediate-range GLBMs or the longest stages of such GLBMs of the inspected Party.

(14) Vehicles exiting through the portal specified in paragraph 1 of this Section that are declared to contain a missile or missile stage as large or larger than and as heavy or heavier than an intermediate-range GLBM or longest stage of such a GLBM of the inspected Party shall be subject to the following procedures.

(a) The inspecting Party shall preserve the integrity of the inspected missile or stage of a missile.

(b) Measuring equipment shall be placed only outside of the launch canister or shipping container; all measurements shall be made by the inspecting Party using the equipment provided for in paragraph 6 of this Section. Such measurements shall be observed and certified by the in-country escort.

(c) The inspecting Party shall have the right to weigh and measure the dimensions of any launch canister of any shipping container declared to contain such a missile or missile stage and to image the contents of any launch canister or of any shipping container declared to contain such a missile or missile stage; it shall have the right to view such missiles or missile stages contained in launch canisters or shipping containers eight times per calendar year. The in-country escort shall be present during all phases of such viewing. During such interior viewing:

(i) the front end of the launch canister or the cover of the shipping container shall be opened;

(ii) the missile or missile stage shall not be removed from its launch canister or shipping container; and

(iii) the length and diameter of the stages of the missile shall be measured in accordance with the methods agreed by the Parties so as to ascertain that the missile or missile stage is not an intermediate-range GLBM of the inspected Party, or the longest stage of such one stage which is outwardly

similar to a stage of an existing type of intermediate-range GLBM.

(d) The inspecting Party shall also have the right to inspect any other containers or shrouded objects inside the vehicle containing such a missile or missile stage in accordance with the procedures in paragraph 13 of this Section.

X. Cancellation of Inspection

An inspection shall be cancelled if, due to circumstances brought about by *force majeure*, it cannot be carried out. In the case of a delay that prevents an inspection team, performing an inspection pursuant to paragraphs 3, 4 or 5 of Article XI of the Treaty, from arriving at the inspection site during the time specified in paragraph 2 of Section VII of this Protocol, the inspecting Party may either cancel or carry out the inspection. If an inspection is cancelled due to circumstances brought about by *force majeure* or delay, then the number of inspections to which the inspecting Party is entitled shall not be reduced.

XI. Inspection Report

(1) For inspections conducted pursuant to paragraphs 3, 4, 5, 7 or 8 of Article XI of the Treaty, during post-inspection procedures, and no later than two hours after the inspection has been completed, the inspection team leader shall provide the in-country escort with a written inspection report in both the English and Russian languages. The report shall be factual. It shall include the type of inspection carried out, the inspection site, the number of missiles, stages of missiles, launchers and items of support equipment subject to the Treaty observed during the period of inspection and any measurements recorded pursuant to paragraph 10 of Section VI of this Protocol. Photographs taken during the inspection in accordance with agreed procedures, as well as the inspection site diagram provided for by paragraph 6 of Section VII of this Protocol, shall be attached to this report.

(2) For inspection activities conducted pursuant to paragraph 6 of Article XI of the Treaty, within 3 days after the end of each month, the inspection team leader shall provide the in-country escort with a written inspection report both in the

English and Russian languages. The report shall be factual. It shall include the number of vehicles declared to contain a missile or stage of a missile as large or larger than and as heavy or heavier than an intermediate-range GLBM or longest stage of such a GLBM of the inspected Party that left the inspection site through the portal specified in paragraph 1 of Section IX of this Protocol during that month. The report shall also include any measurements of launch canisters or shipping containers contained in these vehicles recorded pursuant to paragraph 11 of Section VI of this Protocol. In the event the inspecting Party, under the provisions of paragraph 14 (c) of Section IX of this Protocol, has viewed the interior of a launch canister or shipping container declared to contain a missile or stage of a missile as large or larger than and heavy or heavier than an intermediate-range GLBM or longest stage of such a GLBM of the inspected Party, the report shall also include the measurements of the length and diameter of missile stages obtained during the inspection and recorded pursuant to paragraph 11 of Section VI of this Protocol. Photographs taken during the inspection in accordance with agreed procedures shall be attached to this report.

(3) The inspected Party shall have the right to include written comments in the report.

(4) The Parties shall, when possible, resolve ambiguities regarding factual information contained in the inspection report. Relevant clarification shall be recorded in the report. The report shall be signed by the inspection team leader and by the members of the in-country escort. Each Party shall retain one copy of the report.

This Protocol is an integral part of the Treaty. It shall enter into force on the date of entry into force of the Treaty and shall remain in force as long as the Treaty remains in force. As provided for in paragraph 1 (b) of Article XIII of the Treaty, the Parties may agree upon such measures as may be necessary to improve the viability and effectiveness of this Protocol. Such measures shall not be deemed amendments to the Treaty.

Part III

Conclusions

Round Table

What follows is a presentation and elaboration of some of the observations presented by members of the UNIDIR Group of Experts at the round table held at Geneva on 29 June 1990. It does not reflect the precise individual positions expressed by any of these experts, but rather constitutes a synthesis and summary of their points of view. Serge Sur assumes responsibility for this presentation. In addition to the author, the following participated (in a personal capacity) in this round table discussion:

- Ednan AGAEV (USSR),
- Anguel ANASTASSOV (Bulgaria),
- Adolf von BAECKMANN (International Atomic Energy Agency (IAEA)),
- Frank R. CLEMINSON (Chairman, Canada),
- Gilles COTTEREAU (France),
- DU SHUHUA (China),
- Jozef GOLDBLAT (Sweden),
- Andrzej KARKOSZKA (Poland),
- Ahmed MAHIOU (Algeria),
- Ellis MORRIS (Canada),
- William C. POTTER (USA),
- Henny J. van der GRAAF (Netherlands).

Conclusions: Round Table

Serge Sur

After having analysed the various instruments, their provisions and practices concerning verification, it is tempting to abandon the empirical approach and the scattered lessons that can be drawn from it and to think in terms of conclusions of a more general nature. There is no point in describing a series of agreements, inevitably incomplete and transient, if no valid conclusions can be derived from their comparison.

Such conclusions must, moreover, be sought in a number of areas. First of all it should be emphasized that, despite the attention that is once again being accorded to the subject, verification has always - or almost always - been embodied in agreements. A large number of provisions, at first sight extremely diverse, have been devoted to it, and this constitutes the first application of the ever-present principle of specificity that will be discussed later.

Then there is the question of whether it would be possible to develop a *theory* of verification, which would not however be of a normative character. It would not attempt to determine what constitutes *sound* verification but, in a more modest way and more specifically, aim at drawing up a list, on the basis of practical experience, of existing rules and their application, and setting out a general *concept* of possible and acceptable verification developed by those who negotiated the agreements in question.

Despite the number and diversity of such agreements - or possibly for this reason - it would be illusory in the present state of affairs and of the law, to attempt to devise a theory of this kind. General agreement has not even been reached concerning the *definition* of verification. The constituent parts of the process are not perceived in the same manner. Empiricism and a *step-by-step* approach predominate. Recent developments and their accelerated pace emphasize the central role and minimum requirements of verification, even though the trend of these developments is not always completely clear. If, for example, more intrusive verification is accepted, there are nevertheless limits to the extent of its level of intrusiveness. If in some cases internationalization of the process appears desirable, the *privileges of the Parties* remain of fundamental importance. As political difficulties are overcome, technical constraints increase. A balance must therefore be found between these opposing demands. Some expect verification to improve their own security, while others hope it will enhance the security of all. Some emphasize domestic interests while others stress international aspects. With all these various factors present, verification remains a vast building site just like disarmament and arms limitation and even, in a broader context, like the organization of international security as whole.

The instruments and agreements in force, as well as their practices, are the foundation stones available on this building site. On the basis of their examination in the context of current trends, an attempt can be made to draw up a balance sheet and to identify prospects; at the same time a parallel effort can be initiated to explore possibilities of strengthening verification.

I - Balance Sheet and Prospects

THE CONFIDENTIALITY OF PRACTICES

Although the provisions of various instruments are by nature public, the practices of the Parties and the conclusions they reach in verification matters usually remain confidential, and it is not an easy matter to obtain information about them. Moreover, even if certain conclusions are made public, they should be treated with caution because they are usually of a unilateral nature, expressing the views of only one party or a group of parties and reflecting their interests as they perceive them. Only in the event of an international process would confidentiality be eliminated - and even then not in all cases. For example, the investigations conducted by the Secretary-General into the alleged use of chemical or biological weapons give rise to published reports. Details on IAEA's inspections, on the other hand, remain confidential - or at least are communicated to the Members of the Agency, but on a confidential basis.

This confidentiality obviously hampers the outside observer because it complicates access to and evaluation of the lessons drawn from procedures. It may also hamper the parties, particularly in the case of multilateral treaties, for two reasons.

In this context, publicity could serve to offset any inequalities between the Parties in so far as they do not possess the same means of collecting and analysing the data required for verification purposes. Parties possessing effective means could thus perform an international function by enabling all Parties to benefit from the information they have collected and the conclusions they draw from it. Such publicity would also be in line with the worldwide interest of the treaty which, over and above the rights of each individual party, is of concern to the international community as a whole.

On the other hand it may be said that the bilateral US-Soviet treaties are of more limited interest and more a reflection of the rights and obligations pertaining to those two States alone; logically, therefore, they alone should decide whether to publicise their practices. It is striking, for example, in the case of the INF Treaty, in which co-operative verification procedures have been developed to a remarkable extent, that inspection reports are in principle not even communicated to the countries which have housed the missiles now earmarked to be destroyed.

However, the matter can be viewed from a different angle. It can be argued that the bilateral treaties in question are of no less concern to the international community than multilateral treaties, and that knowledge about their practical implementation is of great importance. Moreover, the controversy concerning the application of the ABM Treaty, accompanied by mutual recriminations that only ceased after the USSR admitted its violation of the Treaty, was to a large extent made public and discussed before a number of bodies, both national and international.

Then again, even within the framework of multilateral treaties, confidentiality has its advantages. It is a good thing, for example, that not too much information is provided about means of implementation so that Parties inclined to ignore their

obligations will not learn about the Treaty's shortcomings and thus be tempted deliberately to circumvent the Treaty.

Lastly, a few words should be said about the Antarctic Treaty. It seems that if some States Parties, notably the United States, have seen fit to disseminate information obtained as a result of verification it is, at least to some extent, in order to maintain the privileged status that they enjoy within the Antarctic system (States entitled to participate in the meetings provided for by Article IX of the 1959 Treaty). This dissemination has the effect of reducing the political pressure from other States which would like to achieve this status or else actively challenge it. The result is therefore a subtle interplay between the dissemination of information and the desire to retain a privileged position.

Although no definitive conclusion can be drawn, it is clear that in practice Parties are completely free to dispose of the information obtained as a result of verification as they see fit.

THE LIMITS OF VERIFICATION

The theoretical limits of verification have already been emphasized: regardless how sophisticated and intrusive, only in exceptional cases can the verification process offer a cast-iron guarantee that commitments are being respected. It is generally considered as satisfactory to detect militarily significant violations with a very high degree of probability and therefore, in practice, discourage them.

Do the various procedures that have been examined offer a guarantee of this kind? What is striking is that no party has ever withdrawn from a treaty because it considered verification inadequate. In some cases, even initial recognition of the limits of verification has not prevented subsequent accession to a treaty - one example being France's accession in 1984 to the Biological Weapons Convention. Admittedly it is not easy to revise treaties (see below) which have been accepted by Parties who may later find it somewhat difficult to criticize their own work. On the other hand a recognized inadequacy of verification may hamper the entry into force of a treaty until this shortcoming is corrected, as in the case of the bilateral US-Soviet Treaties of 1974 and 1976 on the Limitation of Underground Nuclear Testing, not ratified by the United States until the Protocols were subsequently adopted (1990; see below).

The limits are also apparent in other respects. In line with prevailing wisdom, it is assumed here that verification covers not only the establishment and analysis of facts but also their legal assessment with a view to determining that the Parties do not fail to respect their obligations. Yet the possibilities of this assessment and the machinery for consultation and for the settlement of disputes in this respect are very limited, particularly in multilateral frameworks. Even in the case of bilateral treaties, the example of the ABM Treaty has demonstrated that the Consultative Commissions established under it might be of only limited help. In the absence of any clear-cut rules, each party is entitled to make its own assessments, but has no legal

method of imposing them on the other Parties so that verification might well become a dead end.

It is clear that, generally speaking, the monitoring aspect receives more attention in treaties than the legal-political assessment aspect. This is due to the fact that unilateral procedures outweigh co-operative procedures - an observation that applies to a large number of instruments. Unilateral procedures are not limited to NTM which constitute a special case. More generally, they entail the ability of each party to engage in monitoring, using its own means in accordance with general international law, as well as to make its own assessment of the conduct of the other parties. In the future partial solutions are likely to be found in a regional rather than in a global context.

A REVOLUTION IN VERIFICATION?

The above comments might well appear to be somewhat out of date and, to say the least, pessimistic in view of the recent rapid and impressive developments of the process - for example the Final Document of the Stockholm Conference (1986) and the INF Treaty (1987). The former initiated the possibility of on-site inspections and the use of aerial means above the territory of the signatories, and the latter the development of on-site inspection, including in the territory of third countries and the improvement of a co-operative process for establishing the facts. It must be stressed that national territories of great Powers are subject to on-site inspections without a right of refusal.

Some 30 years ago it was emphasized in many quarters that the development of satellites and the gathering of information without intruding upon the territory of the Parties had considerably facilitated the verification of agreements, both multilateral as well as bilateral - even if the use of this technique was based on apparent equality close to actual privilege - which therefore became easier to conclude. Yet this was at best a method of evading the problem of verification rather than resolving it, and in any case was tantamount to providing a technological solution to a political problem.

The situation has changed completely since then. The breakthrough achieved in this field has not been due to any particular technological advance. The change that has taken place is of a basically political nature, and in this sense can be called revolutionary. The traditional obstacle represented by on-site inspection has been removed and the consequences, already apparent over the short term, should persist.

Would it therefore be feasible actually to suggest that, owing to the development of procedures and their improvement, the deterrent role of verification may increase and become general, making verification an important component of international security as a whole? Could deterrence by verification possibly replace nuclear deterrence, making verification a corner-stone of security, and allowing deterrence through transparency to replace deterrence by threat of retaliation? This attractive prospect is at yet only a possibility dependent on the conclusion of further

agreements. It is moreover related to the question of the specificity or autonomy of verification (see below).

More to the point, the problems have not all been solved by the political breakthrough achieved in such a spectacular fashion a few years ago. On the contrary, the elimination of the political blockage or prohibition brings to the fore the many technical difficulties which are being raised by the process and whose complexity is just beginning to be recognized. To take some examples, the introduction of intrusive procedures - necessarily co-operative - implies the need for detailed and complicated regulations as was demonstrated by the INF Treaty, or even - more simply - by the Secretary-General's investigations in cases of the alleged use of chemical or biological weapons. Internal services have to be set up and competent personnel trained. All this takes time and has financial implications, the extent of which is unknown and might well be high.

Acceptance of the principle of co-operative verification therefore inevitably gives rise to technical, institutional, logistic and financial difficulties. These are certainly not insurmountable but require a minimum period of adaptation and a certain amount of bureaucratic reshuffling, all of which are connected with the achievement, implementation and follow-up of political decisions by one, or even by several, administrative hierarchies.

EAST-WEST / NORTH-SOUTH

What has been said above is unquestionably valid in East-West relations and particularly in US-Soviet relations. Yet it is far from certain that these observations are generally valid in a universal context and especially in North-South affairs. In this respect, the political obstacles have probably been removed only in part, exposing even more difficult technical obstacles.

The political changes that have had a positive impact on verification between the United States and USSR and in Europe affect North-South and South-South relations only marginally, like a by-product. It remains to be seen whether the developing countries are prepared to participate in the rapid breakthrough achieved in respect of verification procedures. In certain situations, the improvement of the East-West climate may even have the opposite effect, since certain countries may anticipate, and be in fear of, the formation of a new condominium imposing on them obligations that are apparently equal but in reality unbalanced.

As a matter of fact the technical obstacles have increased for the developing countries, since the verification process implies that the States concerned possess the considerable means required to participate in it. This is true not only with respect to the collection of basic data but also their interpretation, as well as the recognition of the validity of the conclusions drawn and positions adopted, since the developing countries do not participate in the activity being verified. For example, how can non-space Powers acquire information on the use of satellites and on the basis of such information draw credible conclusions concerning compliance with the Outer Space

Treaty of 1967? (This is also true of Powers possessing only embryonic navies in respect of the 1971 Sea-Bed Treaty). Even if it were to be very intrusive, the verification of these instruments would be of only symbolic value to them, particularly if they are not given access to information thus obtained.

This explains the desire to establish an international verification system capable of correcting these inequalities and ensuring concrete participation or at least more comprehensive information disseminated to the Parties of multilateral treaties. However, this possibility of strengthening procedures in relation to existing practice raises a number of problems which will be taken up later on.

These very real technical difficulties could be used as a pretext to reject obligations that are too restrictive, which brings us back to a traditional obstacle to verification. However, these difficulties have so far not prevented the conclusion of major multilateral conventions, as is illustrated in the second part of this book.

A CRITERION FOR THE CLASSIFICATION OF TREATIES?

Is it possible to differentiate between several categories of treaties according to their verification procedures? In a very rough manner, one could begin by distinguishing between bilateral and multilateral treaties. In this case, verification could be used as a classification criterion. Although the criterion may be of interest, its value is only relative.

If the *number of participants* is used as a yardstick, the distinction made between bilateral and multilateral treaties must be qualified. Firstly, because certain regional instruments - the Tlatelolco or Rarotonga Treaties - do not fit either into the East-West or North-South framework. And secondly because a bilateral understanding is at times embedded in a multilateral treaty, as in the case of the Outer Space Treaty.

And yet, from the standpoint of verification, is there any point in making this distinction? It has already been noted that the confidentiality of information concerning practice could be affected by the bilateral or multilateral character of an instrument. Perhaps paradoxically, the co-operative aspect tends to loom larger in bilateral or regional treaties than in global treaties. The latter do not in general provide for the establishment of consultative commissions and are more inclined to refer to existing international organizations (IAEA in the case of NPT, and the Security Council in the case of the Sea-Bed Treaty or the Biological Weapons Convention). The treaties which provide for the greatest degree of co-operation between the Parties in this respect are bilateral (INF Treaty) or regional (Treaty of Tlatelolco), at least on paper. It is clear that the organization of multilateral co-operation raises specific problems. However, apart from this general observation, it is difficult to narrow the criterion down convincingly. Moreover, the future convention prohibiting chemical weapons may well change that situation.

If the *purpose of the treaty* is used as a yardstick, a distinction could be made, for example, between instruments relating to nuclear weapons, those dealing with chemical or biological weapons and others concerning conventional weapons.

However a number of treaties restrict several types of weapons at the same time (Antarctic Treaty, Outer Space Treaty, and even the ABM and INF Treaties). Also, the type of weapon being controlled has no real connection with verification. For example, on-site inspection is provided for in the nuclear context (NPT, INF), but also in the chemical (investigations of the Secretary-General into alleged cases of use) or conventional framework (Final Document of the Stockholm Conference). Similarly, the distinction between limitation or reduction of weapons does not seem to offer a convincing basis in this connection. Various degrees and forms of verification devoid of any logical pattern are apparent in all cases, whether in respect of test bans, deployment, use, non-production or destruction.

Yet certain procedures unquestionably *set an example*; what is used in one treaty will tend to be taken up in subsequent treaties. This has been true of NTMs and will also apply to on-site inspections which, apart from their intrinsic merit, assume symbolic value in current agreements. It would therefore appear that certain methods have a spill-over effect due not only to their political and symbolic significance, but also to their inherent efficiency. This gradual cross-fertilization of treaties, which opens the prospect of evaluating verification as a whole and not as a collection of individual and totally independent provisions, raises the problem of the specificity and autonomy of verification procedures.

SPECIFICITY AND AUTONOMY

Specificity means that verification procedures are specific to each individual treaty. It does not necessary imply that the Parties alone are involved in the process but that the possible intervention of third parties - international organizations or other States - depends on their consent. For example, in the establishment of facts, powers of investigation may be entrusted to international bodies, while international legal channels could be used to settle disputes concerning the interpretation of obligations. The treaties examined in this book contain several examples. But each treaty or instrument provides for a verification regime which is specific to it and cannot in principle be extended.

Specificity is justified by the distinctive features of agreements and by the prohibitions or limitations they set. These distinctive features may be explained by the type of weapons dealt with. For instance, constraints relating to weapons whose effectiveness (the extent of damage they can cause) depends on their power cannot be verified in the same manner as those constraints on weapons that are stockpiled in quantity and are therefore easier to detect. These features may also reflect the nature of the prohibition. Complete prohibition is in principle easier to verify than partial prohibition, as has been demonstrated by the INF negotiations.

Autonomy, on the contrary, implies that the verification process may be envisaged in itself, distinct from a particular treaty but applicable to a group of treaties. Yet this process must be related to the obligation that it provides protection against violation. If not, it is simply tantamount to monitoring. Autonomy may, however,

take the form of a segmentation of the process which distinguishes between the establishment of facts, for example, and the political and legal assessment of those facts.

It is in connection with the establishment of facts that autonomy may be most marked, insofar as identical procedures of a general nature can be used for several treaties and instruments. Satellites are a good example. Yet this observation is also applicable to organized verification: e.g. IAEA is entrusted with verification in the framework of the NPT, of the Treaty of Tlatelolco, and of the Treaty of Rarotonga. Furthermore, investigations of the alleged use of chemical or biological weapons are legally independent from the Geneva Protocol and based on the Charter of the United Nations. In any case they are confined to factfinding. This machinery is not, however, alien to verification and is politically connected to the 1925 Geneva Protocol as well as the convention at present being negotiated on the prohibition of chemical weapons.

Thus, although based on opposing concepts, specificity and autonomy are not necessarily incompatible. They may be reconciled if the monitoring aspect is clearly distinguished from the legal-political assessment aspect. On the one hand, a single process or at the very least a comparable one should be initiated to establish facts, collect basic data and possibly analyse them. On the other hand, for each individual treaty or instrument, assessment concerning compliance should stem only from the Parties to the agreement in question, or at least derive from their specific consent.

Going beyond these observations of principle, it may be said that a new balance is being evolved between specificity and autonomy as a result of the evolution of practice. Specificity continues to predominate, and this is fully justified by the distinctive features and requirements of each agreement. Yet autonomy is emerging thanks to the use of the verification process, at least its monitoring component, without having any direct link with a specific agreement. Some examples are given below.

For instance, there is a tendency to test, unilaterally or jointly, verification techniques before an agreement is concluded and to initiate a form of co-operation that is not strictly connected with the application of any agreement in force. This was true of the subsequent elaboration of the protocols to the treaties limiting underground nuclear explosions (1974-1976). Today the same method is being used in the framework of the negotiations on chemical weapons as well as in connection with START. In the end, however, such methods are linked to a specific treaty.

Another example is the development of voluntary verification procedures over and above what is required for by the provisions of a treaty. Under the ABM Treaty, for example, the USSR on its own initiative organized a visit to the controversial Krasnoyarsk site for American Congressmen. The results are not always convincing, however; such measures may be more in the nature of a unilateral demonstration of compliance with a treaty rather than objective verification.

Lastly, it may be noted that prospects for an agreement on organized overflights of the territory of partners (open skies) pave the way for the extension of autonomous mechanisms for establishing facts relating to a large number of treaties or instruments. Although these negotiations in themselves are concerned more with a

regime of confidence-building measures, they also deal with the verification process, at least as regards the establishment of facts. The same would be true if embryonic international machinery were to be developed under the United Nations. This embryo exists in the form of the investigative procedures available to the Secretary-General as well as, explicitly, under the Charter of the United Nations in the form of the Security Council's powers of investigation. Yet the question is of a broader nature and concerns the possible development of an international verification system.

It would therefore be going too far to speak of an irresistible movement towards autonomy of the verification process. But what is apparent is a watering-down of specificity, a set of practices on the margins of verification which are nevertheless part of the process and tend to enhance its autonomy with respect to a specific treaty.

ONE OR MORE METHODS

The point at issue concerns the establishment of facts because, in assessing compliance with obligations, what is striking is the absence - with few exceptions - of any organized method. With respect to the monitoring element, however, practice under various instruments reflects a wide variety and combinations of methods. This may be due to the fact that treaties permit States Parties to use their means of information in ways compatible with international law. It may also be due to the treaties themselves, either because they refer to National Technical Means (ABM for example) or because they make express provision for various procedures (Antarctic Treaty and INF Treaty for example).

The most common NTM include the use of satellites which for a time constituted a method of choice. Satellites certainly still play a very important role but are in themselves inadequate. A combination of several methods and procedures is clearly indispensable.

At present the emphasis is on on-site inspection which, involving various procedures and subject to an agreed definition, is sometimes presented as a panacea. This kind of inspection also has symbolic value. On the one hand, it demonstrates the good faith of those who accepted and therefore agreed to an intrusive procedure. On the other hand, the presence of and inspection by people are regarded *a priori* as a stronger guarantee than the use of remote mechanical methods, however sophisticated. After a long period during which on-site inspection was unacceptable for reasons of principle, its use in a number of treaties has generated a momentum suggesting that it can offer solutions for all problems.

The conclusions reached in this connection should no doubt be qualified to a greater extent. In the first place, a number of treaties - the majority in fact - failed to provide for such inspections without their value being thereby called into question. Secondly, this procedure is effective only when combined with other methods that enable it to be guided and oriented - examples being the exchange of basic data and remote sensing. Lastly, it might be well to guard against the possible excesses of on-site inspection. It should, for example, not be used to obtain information other than

that strictly required for verification purposes and thereby become an improper intelligence-gathering instrument. Nor should it hamper, in an unjustified manner, the activities being monitored whether they are military or civilian. Concern about this point varies considerably. Moreover, it should permit genuine reciprocity. Its modalities and cost should not confer upon certain States a *de facto* advantage in the use of procedures. However, this caveat is more easily stated than respected.

Be that as it may, the possibilities opened up by inspection are nevertheless considerable. Its development could transform the verification process into an autonomous activity, with units of specialized inspectors, special administrative bodies and regulations which if not common would at least be uniform. It could promote an international community enjoying a certain human and ethical solidarity, engaging in numerous interchanges and generating a new professional spirit. It could also result in the gradual development of a more trusting environment facilitating the internationalization of the process as a whole.

One last question is whether it would be desirable to make a distinction between the nature of activities subject to inspection. It is sometimes advanced that the development of on-site inspection would probably be easier in respect of civilian activities rather than military ones. But there is no consensus in that respect. It was, for example, in the former area that on-site inspection was provided for by relatively old agreements such as the Antarctic and NPT Treaties. The Stockholm and Washington (INF) breakthrough, on the other hand, was in the area of military activity and implies the use of military personnel as a matter of course.

The inspection of civilian activities admittedly raises special problems which do not have the same implications for the security of the State, but are of greater importance from the standpoint of the protection of its economic, industrial and technological interests. Moreover, domestic obstacles could well arise in the case of private activities. The private individuals concerned might be protected by rights that restrict inspection possibilities. For this reason they would have to be associated, in one way or another, with the negotiation of the procedures themselves. This point, however, falls outside the scope of the treaties and instruments in force.

II - Development and Strengthening

REVIEW OF TREATIES?

If there is a perceived need to strengthen verification procedures, one obvious method would entail the amendment of the treaties or instruments in question. The problem might well arise either because obvious shortcomings have become evident in practice, or because the new context of verification permits the use of methods that were previously unacceptable. The former implies a special revision covering one or more instruments, whereas the latter implies the general revision of most of them.

The second case may be dismissed without further ado, for it would be difficult to visualize the revision of all or a large number of agreements not only

because of their diversity but also because of the complexity of the process involved, implying the convening of multilateral conferences, etc. Were this process to be embarked upon, however, it would probably result in the establishment of a generally applicable international verification system, supplementing existing provisions on the subject.

The first case, while apparently simpler and in any event more limited, nevertheless raises a number of difficulties. For example, certain treaties which do not embody either provisions for verification or provisions for investigation are very often considered inadequate - examples being the 1925 Geneva Protocol, the 1972 Biological Convention and even the 1967 Outer Space Treaty - but have never been revised. The obstacle is not of a legal nature since revision of a treaty is always feasible, either provided for in the treaty itself or allowed on the basis of general international law. Of course revision is easier with a bilateral treaty. In all cases the political obstacles are considerable.

Clearly a treaty reflects a complex political balance between the Parties; anything that tends to unsettle this balance is likely to affect the treaty itself, giving rise to a process that might become uncontrollable and even destructive. In any event, verification procedures can certainly be singled out for partial revision. But it might not be possible to confine discussions to these provisions alone, and an attempt could well be made to use the occasion for a general renegotiation of the treaty.

The methods used in practice differ and may take the form of additional protocols - a foretaste of which was provided by the Protocol to the Treaties on the partial limitation of underground nuclear tests. They constitute circuitous methods which do not result in the revision of a treaty but supplement its provisions, as in the case of the Geneva Protocol and the investigative procedures available to the Secretary-General. Mention might also be made of the possible role of the consultative commissions which can overcome difficulties of application and, by arriving at joint interpretations of the treaty, facilitate its verification. The method of review conferences could also be used, as in the framework of the Biological Weapons Convention, even though the results of those held under multilateral conventions are not always encouraging.

THE CONFIDENCE-BUILDING MEASURES ALTERNATIVE

Can these circuitous procedures be extended to confidence-building measures? We know that they are closely related to verification and cannot always be easily distinguished. Certain confidence-building measures are intended as part of a verification process - examples being the exchange of basic data, the provision of information and everything connected with exchanges and communications. In a broader sense, a confidence-building measure such as a possible open-skies agreement would promote the verification of a set of treaties without being connected with any particular one.

Beyond this "participation" of confidence-building measures in the verification process, they can also be envisaged as an alternative, or as "verification by demonstration", in certain areas where precise commitments are difficult to verify and for this reason may be difficult to accept. This is true, for example, of research and development connected with new technologies, the qualitative aspects of the armaments race and possibly also outer space, as well as the transparency of military budgets and their presentation in accordance with internationally agreed methods.

VERIFICATION BY OPENNESS

In leaving the area of treaties and even a purely inter-State logic, it has been noted that the value of verification procedures and confidence-building measures may be reduced by the development of international relations. Their increasing openness and democratization, the growing number of scientific and cultural exchanges and the free movement of information and persons could in time render pointless various restrictive procedures that for so long have cast a veil of secrecy and doubt over the intentions of Parties.

In this way the impact of political changes (whose influence on verification has already been noted) would be enhanced and become general. Yet after having made verification easier, these changes would render it less useful. For example, it has been pointed out that, in the European context, an approach of the open-skies type would not provide much more new information than that available from the regular flow of communications and exchanges. The general opening up of the territory would be more effective than the limited and circumscribed opening-up of the skies.

It is also clear that the domestic development of societies, which is the corner-stone of international relations, is at the origin of this opening-up process and the confidence that it creates. The establishment and development of a State based on the rule of law, together with the adoption within the framework of that State of a public monitoring system and procedures for examining sensitive activities - as in the nuclear, chemical, biological and genetic fields - can compensate for the absence of intrusive verification procedures. Reference has already been made to the 1972 French law on the monitoring of biological research.

Yet the advantages of this development should not be exaggerated. In the first place the process is partial and reversible. And secondly this evolution is mostly limited to Europe, its extension to the world as a whole remaining largely problematical. Despite the analysis carried out by Francis Fukuyama, it is doubtful whether the end of the century will coincide with the end of history. In any event, there will always be an area, namely, that of the security of States, in which military activity and research into and development of new weapons will maintain an opacity and uncertainty that will require the inclusion in treaties of provisions that are carefully negotiated and monitored. Moreover, areas of tension and conflict - whether they are ideological or not - will inevitably persist. The quest for international security will continue to be based on a conscious and organized inter-State process in which

verification will probably maintain its place of choice and should in the normal course of events even increase in importance.

CO-OPERATIVE VERIFICATION

One of the most promising developments in verification is in the area of co-operative verification. It may even be said that one of the main advantages of on-site inspection is not so much its intrusive character as its co-operative nature. The opening up of installations on its territory to foreign or international observers, implies that the inspected State co-operates in the procedure being followed. It cannot claim that it was not involved in the process, nor can it ignore the factual conclusions drawn on the basis of the inspection. Either they provide an objective basis for subsequent discussion or they are arrived at in circumstances that make them binding just as much upon the inspected as upon the inspecting State. In the case of the INF Treaty, for example, the inspection report is signed by the two Parties and is therefore authentic for both. This constitutes a qualitative change in the nature of the verification operation, the implications of which are highly important.

However, in the present state of treaties and their practice, this co-operation is essentially confined to the establishment of facts, the collection of data and their evaluation by both sides. The essential factor is still lacking, namely a procedure for the joint settlement of political and legal questions connected with the evaluation of these data and verification of their conformity with the obligations assumed by the Parties. The idea of consultative commissions is interesting in this respect, but in practice rather disappointing, and in any event very little is known about them. Nor are such institutions in general use.

Indeed it is difficult to imagine that a system of compulsory judicial settlement could be established in this area which is of direct concern to States' security. In view of the rapid response that might be required and the combination of legal and political considerations surrounding such problems, reference to a judge, even an international one, is probably unsuitable. New approaches - that could vary depending on the bilateral, regional or multilateral framework in question - to co-operation for the rapid settlement of disputes must therefore be drawn up and adopted. Recourse to the Security Council, as provided for in certain multilateral treaties (Sea-Bed Treaty, Biological Weapons Convention and ENMOD Convention) is also far from satisfactory. In view of the nature of the Council, its composition and its general and diffuse responsibilities, it is not a suitable instrument except in cases of major violations of a treaty that immediately jeopardize international security (which is an extreme case). The negotiations on chemical weapons and on conventional forces in Europe, however, possibly open up more interesting possibilities.

VIOLATIONS AND REACTIONS

It is difficult, in dealing with verification, to avoid referring to the question of the violation of treaties. The deterrent role of verification is admittedly important and is even likely to increase further as the effectiveness of procedures is improved. Nevertheless, the purpose of verification of a treaty is not only to prevent its violation but also, possibly, to establish that it has been violated. What can be done in such cases? The reply is not provided by the verification process itself. It might however influence its usefulness and even the usefulness of the Treaty. In the extreme case, might it not be better to do without verification procedures or even a treaty, if failure to observe the commitments it embodies does not give rise to a suitable reaction. A treaty that is violated without adequate reaction is seriously undermined, as was recently demonstrated by the violations of the Geneva Protocol. And in addition such violations weaken all treaties in general, present as well as future.

It is obvious that the strengthening of verification procedures implies that greater attention must be paid to the possible violation of treaties and to the reactions which such violations should incite. Only a few general observations can be presented in this connection. In the first place, this subject does not fall under the verification heading in the strict sense of the word. And secondly, virtually no practical experience has been acquired in this respect, with the notable exception of the problem related to the ABM Treaty. Article 20 of the Treaty of Tlatelolco also provides for measures in the event of violation by a party, but it has never been invoked.

The actual task of drafting legal treaty language is of vital importance in ensuring that an instrument's provisions are as comprehensive and as straightforward as possible, and that the number of unintentional ambiguities or unclear passages is kept to a minimum. Such semantic precision has often been neglected, particularly in bilateral treaties. However, imprecision is inevitable - a grey area created not only by intentional ambiguities which result from incomplete agreement, but also by the evolution of events and techniques that raise difficulties that were unforeseen during the negotiations. The existence of procedures for consultation and the settlement of disputes should make it possible to prevent such ambiguities from mushrooming into insoluble accusations of violation, thus resulting in the collapse of the treaty. Although nothing further will be said at this point about the establishment of violations, it would obviously be most desirable if methods used for this purpose were to be agreed upon between the parties concerned.

It would certainly be useful to classify violations, based not only on their object but also on their seriousness and origin. This classification should be accompanied by a list of appropriate reactions corresponding to each kind of violation, depending on its seriousness and the rights and interests it has affected. Depending on the object of violations, a distinction should first be made between those violations affecting verification procedures (meant to hamper normal verification) and those affecting the substance of the instrument. In the latter case a further distinction should be made between those affecting secondary provisions and those jeopardizing the

achievement of the primary objectives and purposes of the treaty as a whole. The absence of conclusion of the agreements for IAEA safeguards, which are to be accepted by non-nuclear States according to the NPT for example (Article III, paragraph 4) could possibly fall in this last category.

This first criterion to a certain extent embodies aspects of the seriousness criterion. Yet the latter does not depend solely on the object of the obligations violated. The seriousness of the violation and the danger it presents to other parties depends on the circumstances of the violation as a whole. The simplest distinction is between militarily significant violations and those which do not jeopardize the security of the other parties. The assessment here is basically of a political nature and to some extent subjective since it may depend on existing relations between Parties.

A third criterion concerns intention. An intentional violation is *a priori* more serious and dangerous than an unintentional violation. Yet in the security context an intentional violation might well only have minor consequences whereas a violation committed inadvertently might be extremely dangerous. Unintentional breaches, however, should be more easily corrected.

These various criteria should be combined in establishing a list of possible reactions; this list should to some extent be drawn up in advance so that, if necessary, the appropriate reaction could be selected as a matter of urgency. If made public the list could have an enhanced deterrent value by creating certainty as to the risk run by any State that deliberately violates its obligations.

So far very little has been done along these lines however. Generally speaking, various treaties contain two alternative or cumulative measures on the subject: withdrawal from the treaty or reference to the Security Council. The right to withdraw is formally embodied in virtually all treaties and in any event is always feasible under general international law. Reference to the Security Council is provided for by a number of multilateral treaties, and is also possible under the Charter of the United Nations in the case of a threat to, or breach of, international peace and security.

In addition to these provisions, the Parties affected by violations enjoy other guarantees under general international law. In the first place there is the establishment of the responsibility of the State which has committed the illegal act and the right to satisfactory reparation. However, the process involved is a difficult one and poorly organized, and it can take a relatively long time to achieve results. Then there is the possibility of adopting countermeasures intended temporarily to protect the interests or security of the injured party as well as to bring pressure to bear on the State accused of the violation.

Among the set of possible countermeasures worth noting is the suspension of the Treaty by the injured party. Such a suspension may constitute a step towards a final withdrawal, but could also be used to apply pressure to start negotiations between the concerned States.

This right to take countermeasures offers greater, more varied and less extreme possibilities than withdrawal, which is very likely to destroy rather than strengthen the treaty. For example, during its controversy with the USSR concerning

the ABM Treaty, the United States considered the application of countermeasures but dismissed the idea of withdrawal. As a matter of fact, no State has so far withdrawn from any disarmament or arms limitation agreement, or suspended its participation in it.

A number of distinctions of principle have to be made in connection with countermeasures. Emphasis can be placed on the role they play in protecting the security of the injured party. In this case they assume the form of security measures more than action taken to strengthen the treaty and come under the classical heading of "reprisal and retaliation". But emphasis can equally be placed on the pressure that they bring to bear as a means of inducing the recalcitrant party to respect the treaty. In this case, they take the form of measures intended to protect the treaty itself and not only the security of an injured party.

One last question is whether the distinction made between bilateral and multilateral treaties might be of any interest in this connection. Indeed, it may be said that the main purpose of bilateral treaties is to protect the interests of the two Parties, whereas multilateral treaties are designed to protect the collective interest. The violation of the latter should therefore in principle give rise to collective reactions aimed at restoring complete respect for the treaty. But this distinction must once again be qualified. Bilateral treaties are also of collective interest even if they create neither rights nor obligations for third parties.

These various measures should be analysed more thoroughly with a view to the preparation of a list of possible reactions, applicable according to the seriousness of the violation and possibly also the rights and interests that have been damaged - the individual interests of a party and the collective interests of all Parties and the durability of the treaty. The negotiations on chemical weapons and on conventional forces in Europe once again open up interesting possibilities in this respect. But it is clear that reactions implying the use of force should be the prerogative of the Security Council, subject to the individual or collective self defence reservation.

AN INTERNATIONAL VERIFICATION SYSTEM?

The preceding observations have taken us away from the subject of verification in the strict sense of the word. The final comments will go beyond treaties and instruments in force as well as their practice, since to a large extent they are based on the principle of specificity and invariably enshrine the privileges of the Parties involved.

The question of an international verification system, possibly under the auspices of the United Nations, demands attention. One wonders whether the current trends favourable to the development and strengthening of verification will result in the emergence of a system of that nature. Proposals along these lines have been made and a study on the subject was recently carried out by the United Nations. The very purpose of that study was to identify a concept and a process that were internationally defined and applied, even if as yet perceptible only in theory.

This system could be brought about in two different - even diametrically opposed - ways, namely, the deliberate and intentional organization of general international machinery, or the gradual development of homogeneous instruments and practices whose convergence would result in the empirical unification of procedures.

The conscious and intentional organization of verification procedures - which is unlikely in the near future - is a topic in itself. It may simply be recalled that only the establishment of facts can be internationalized in the sense of being performed outside the framework of a particular treaty and not confined to the Parties; the interpretation of the treaty and the establishment of its violation remain the privilege of the Parties. It is known that the Secretary-General's investigations constitute the embryo of possible machinery of this kind whose purpose could be extended provided that adequate human, technical, logistical and financial resources were made available.

As for the empirical emergence of homogeneous machinery, it is clear that regional developments, particularly in Europe, will play a major role. The process may be slow but it has probably begun. The role of international and notably regional or specialized organizations, already in existence or yet to be created, should also be explored, and an analysis of existing practices as well as proposals and projects concerning them would be extremely valuable. If these various possibilities are realized, the revolution in verification referred to above would begin to emerge. However, that is a different subject which would warrant further research and is beyond the scope of this present book.

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