CONFERENCE ON DISARMAMENT

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REPORT OF THE CONFERENCE ON DISARMAMENT

APPENDIX I

VOLUME IV

Texts of documents issued by the

Conference on Disarmament

GE.92-71404

CONFERENCE ON DISARMAMENT

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CD/CW/WP.390
3 March 1992

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FRANCE

Provision of data relevant to the Chemical Weapons Convention

1. Introduction

As the date for completion of the negotiations on chemical weapons approaches, the provision of data relevant to the Convention is regarded as increasingly vital for setting up the Organization for the Prohibition of Chemical Weapons.

France presents hereunder information concerning the manufacture and use of the chemicals listed in schedules 1, 2 and 3.

2. Method of collection of information concerning the chemicals industry

The Union des Industries chimiques was requested to conduct a survey of the some 1,200 companies members of the Union, which represents the entire French chemicals industry. The information obtained reflects the situation in the industry in mid-1991.

The information was provided on a voluntary basis and therefore it cannot be guaranteed to be absolutely complete. Nevertheless, the data obtained are deemed to be sufficiently exact and comprehensive to meet the requirements.

Schedules of chemicals 1, 2 and 3 in document CD/1046 of 18 January 1991 were used as the basis for collection of these data.

3. Information concerning uses for protective purposes

The present aggregate production situation is shown in appendix 1.

Chemicals listed in schedule 1 are produced for defence research and protective purposes in a small-scale production facility whose maximum total capacity is 300 kg/year.

These chemicals are consumed either at the research centre in which the facility is situated, in a decontamination measures and research department (a few kg/year), or at a military centre for protection training (a few kg/year).

4. Information concerning the chemicals industry

The firms which responded to the survey may be classified as follows:

- Schedule 1: 1 firm uses one type of chemical (nitrogen mustards)

- Schedule 2A: 9 firms produce or use certain chemicals

- Schedule 3: 35 firms produce or use certain chemicals.

In all, there are 15 production sites and 58 processing/consumption sites.

Appendix 2 shows the aggregate situation regarding the number of plants producing or using the chemicals listed in the different schedules.

Appendix 3, for production, and Appendix 4, for processing/consumption, show, for each chemical, the production tonnage range.

APPENDIX 1

1 - Presence of chemical weapons in the national territory	No
- Chemical weapons held in the territory of another State	No
2 - Chemical weapons production facilities	None
- Total number of sites where substances listed in schedules 1, 2 or 3 are produced, processed or consumed	74
3 - Types and names of chemical warfare agents produced (*)	Mustard gas, Tabun, Sarin, Soman, VX
- Types of chemical munitions stored; chemical weapons in bulk	Not applicable
- Names of chemicals listed (**) in schedules 1, 2 and 3 produced by the chemicals industry	
4 - Destruction plans and methods, chemical weapon destruction facilities	Not applicable

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(*) In the small-scale production facility

(**) See Appendix 3

APPENDIX 2

AGGREGATE DATA FOR THE CHEMICALS INDUSTRY

Schedule 1			Schedule 2A						Schedule 3					
Production facilities	Processing/ consumption facilities		Production facilities			Production/ consumption facilities			Production facilities			Production/ consumption facilities		
	<1T	>1T	0-10T	10-20T	>30T	<10T	10-30T	>30T	0-30T	30-100T	>100T	0-30T	30-100T	>100T
0	1	0	0	0	3	1	1	7	2	1	13	16	11	24

APPENDIX 3

PRODUCTION IN THE CHEMICALS INDUSTRY

		0-10T	10-30T	>30T
SCHEDULE 2A				
1.	Chemicals containing a phosphorus atom to which is bonded one methyl, ethyl or propyl (normal or iso) group			X
7.	N, N-Dialkyl (Me, Et, n-Pr or i-Pr) aminoethyl-2-chloride			X
8.	N, N-Dialkyl (Me, Et, n-Pr or i-Pr) aminoethane-2-ol			X
9.	N, N-Dialkyl (Me, Et, n-Pr or i-Pr) ethanethiol			X
10.	Bis (2-hydroxyethyl) sulphide			X

		0-30T	30-100T	>100T
SCHEDULE 3				
1.	Phosgene			X
2.	Cyanogen chloride		X	X
3.	Hydrogen cyanide			X
4.	Trichloronitromethane		X	X
5.	Phosphorus oxychloride	X		
6.	Phosphorus trichloride			X
8.	Phosphorous acid esters			X
9.	"			
10.	"			
12.	Sulphur monochloride			X
13.	Sulphur dichloride	X		X
14.	Thionyl chloride	X	X	X

APPENDIX 4

PROCESSING/CONSUMPTION IN THE CHEMICALS INDUSTRY

	0-1T	>1T	30T
SCHEDULE 1			
6. Nitrogen mustards	X(kg)		
SCHEDULE 2A	0-10T	10-30T	>30T
1. Chemicals containing a phosphorus atom to which is bonded one methyl, ethyl or propyl (normal or iso) group			X
6. Quinuclidin-3-ol	X(kg)		
7. N, N-Dialkyl (Me, Et, n-Pr or i-Pr) aminoethyl-2-chloride			X
8. N, N-Dialkyl (Me, Et, n-Pr or i-Pr) aminoethane-2-ol	X	X	X
9. N, N-Dialkyl (Me, Et, n-Pr or i-Pr) ethanethiol			X
10. Bis(2-hydroxyethyl) sulphide		X	
11. 3,3-Dimethylbutan-2-ol (pinacolyl alcohol)	X(kg)		
	0-30T	30-100T	>100T
SCHEDULE 3			
1. Phosgene			X
2. Cyanogen chloride		X	X
3. Hydrogen cyanide	X		X
4. Trichloronitromethane		X	X
5. Phosphorus oxychloride	X	X	X
6. Phosphorus trychloride	X	X	X
7. Phosphorus pentachloride	X	X	
8/9/10. Phosphorous acid esters	X		X
11. Sulphur monochloride		X	X
12. Sulphur dichloride			X
13. Thionyl chloride	X	X	X

CONFERENCE ON DISARMAMENT

CD/1142
12 March 1992

Original: ENGLISH

LETTER DATED 11 MARCH 1992 FROM THE PERMANENT REPRESENTATIVE OF CANADA ADDRESSED TO THE SECRETARY-GENERAL OF THE CONFERENCE ON DISARMAMENT TRANSMITTING COMPENDIA ON OUTER SPACE COMPRISING PLENARY STATEMENTS AND WORKING PAPERS FROM THE 1991 SESSION OF THE CONFERENCE ON DISARMAMENT 1/

In a brief plenary statement on 12 March to the Conference on Disarmament, we will announce that we are once again making available the next in our series of compendia on outer space, comprising plenary statements and working papers from the 1991 session of the Conference. As you know, similar documents have been distributed every year since 1985 and, with recent additions, these compendia bring together documentation covering the period 1962-1991.

I should be grateful if the necessary arrangements could be made for the distribution of the compendia to the members of the Conference on Disarmament.

(Signed) Gerald E. Shannon
Ambassador and
Permanent Representative

1/ A limited distribution of this compendia in English only has been made available to the members and non-members invited to participate in the work of the Conference on Disarmament. Additional copies are available from the Permanent Mission of Canada.

CONFERENCE ON DISARMAMENT

CD/1143
12 March 1992

Original: ENGLISH

AUSTRALIA

Proposed Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction

GE.92-60616/4311B

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PREAMBLE

The States Parties to this Convention,

Determined to act with a view to achieving effective progress towards general and complete disarmament under strict and effective international control, including the prohibition and elimination of all types of weapons of mass destruction,

Desiring to contribute to the realization of the purposes and principles of the Charter of the United Nations,

Recalling that the General Assembly of the United Nations Organization has repeatedly condemned all actions contrary to the principles and objectives of the Protocol for 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 (the Geneva Protocol of 1925),

Recognizing that the Convention reaffirms principles and objectives of and obligations assumed under the Geneva Protocol of 1925, and the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction signed at London, Moscow and Washington on 10 April 1972,

Bearing in mind the objective contained in Article IX of the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction,

Determined for the sake of all humanity, to completely exclude the possibility of the use of chemical weapons, through the implementation of the provisions of this Convention, thereby complementing the obligations assumed under the Geneva Protocol of 1925,

Considering that the achievements in the field of chemistry should be used exclusively for the benefit of humanity,

Convinced that the complete and effective prohibition of the development, production, stockpiling and use of chemical weapons, and their destruction, represents a necessary step towards the achievement of these common objectives,

Have agreed as follows:

ARTICLE I

DEFINITIONS AND CRITERIA

For the purposes of this Convention:

1. The term "Chemical Weapons" shall apply to the following, together or separately:

(a) Toxic chemicals and their precursors, except where intended for purposes not prohibited under the Convention, as long as the types and quantities involved are consistent with such purposes;

(b) Munitions and devices, specifically designed to cause death or other harm through the toxic properties of those toxic chemicals, as referred to above, which would be released as a result of the employment of such munitions and devices; or

(c) Any equipment specifically designed for use directly in connection with the employment of such munitions or devices specified in subparagraph (b) of this paragraph.

2. The term "Chemical Weapons" shall not apply to the following:

(a) Other toxic munitions and devices as specified in paragraph 3 of this Article;

(b) Chemicals that are not lethal chemicals and are used by a State Party for domestic law enforcement or riot control purposes, such as agents CS (O-chlorobenzylidenemalononitrile), CN (2-chloroacetophenone) and CR (dibenz (b,f) (1,4) oxazepine); or

(c) Herbicides, as long as they are used as such.

3. "Other toxic munitions and devices" means munitions and devices specifically designed to cause death or other harm through the properties of toxic chemicals that would be released as a result of the employment of such munitions or devices that have been:

(a) Produced before 1925;

(b) Accidentally recovered from ocean dump sites; or

(c) Found by a State Party on its territory or in any other place under its jurisdiction or control, abandoned by another State or by another person or persons between 1925 and the date of the entry into force of the Convention.

4. "Toxic Chemical" means:

Any chemical which through its chemical action on life processes can cause death, temporary incapacitation or permanent harm to humans or animals. This includes all such chemicals, regardless of their origin or method of production. Toxic chemicals of special relevance are specified in Schedules contained in the Annex on Chemicals.

5. "Precursor" means:

A chemical reagent which takes part in the production of a toxic chemical. Precursors of special relevance are specified in Schedules contained in the Annex on Chemicals.

6. "Chemical Weapons Production Facility":

(a) Means any equipment, as well as any building housing such equipment, that was designed, constructed or used at any time since 1 January 1946:

(i) As part of the stage in the production of chemicals ("final technological stage") where the material flows would contain, when the equipment is in operation, either:

(1) Any chemical listed on Schedule 1 in the Annex on Chemicals (hereinafter referred to as "any Schedule 1 chemical");

(2) Any other chemical that has no use, above one tonne per year in the territory or in any other place under the jurisdiction or control of the State Party, for purposes not prohibited by this Convention, but can be used for chemical weapons purposes; or

(ii) For filling chemical weapons, including, inter alia, the filling of Schedule 1 chemicals into munitions, devices or bulk storage containers; the filling of scheduled chemicals into containers that form part of assembled binary munitions and devices or into chemical submunitions that form part of assembled unitary munitions and devices and the loading of the containers and chemical submunitions into the respective munitions and devices;

(b) Does not include:

(i) Any facility having a production capacity for synthesis of chemicals specified in subparagraph (a) (i) of this paragraph that is less than one tonne;

(ii) Any facility in which a chemical specified in subparagraph (a) (i) of this paragraph is produced as an unavoidable by-product of activities for purposes not prohibited by this Convention, provided that the chemical does not exceed 3 per cent of the total product and that the facility is subject to declaration and inspection under the Verification Annex;

(iii) the single small-scale facility for production of Schedule 1 chemicals for purposes not prohibited by this Convention.

7. "Purposes not prohibited by this Convention" means:

(a) Industrial, agricultural, research, medical, pharmaceutical or any other peaceful purposes, domestic law enforcement or riot control purposes; or military purposes not connected with the use of chemical weapons; or

(b) Purposes directly related to protection against chemical weapons, hereinafter referred to as "protective purposes".

8. "Production Capacity" means the annual quantitative potential for manufacturing a specific substance based on the technological process actually used or, if the process is not yet operational, planned to be used at the relevant facility, and shall be deemed to be equal to the nameplate capacity or, if the nameplate capacity is not available, to the design capacity. The nameplate capacity is the product output under conditions optimized for maximum quantity for the production facility, as demonstrated by one or more test-run(s). The design capacity is the corresponding theoretically calculated product output.

9. "Organization" means the Organization for the Prohibition of Chemical Weapons established pursuant to Article VIII of this Convention.

10. "Production" of a chemical means the formation of a chemical through chemial reaction, including rearrangement.

11. "Processing" of a chemical means a physical process, such as formulation, extraction and purification, in which the chemical is not converted into another chemical.

12. "Consumption" of a chemical means its conversion via a chemical reaction into another chemical.

ARTICLE II

GENERAL OBLIGATIONS

1. Each State Party to this Convention undertakes never under any circumstances:

(a) To develop, produce, otherwise acquire, stockpile or retain chemical weapons, or transfer, directly or indirectly, chemical weapons to anyone;

(b) To use chemical weapons;

(c) To assist, encourage or induce, in any way, anyone to engage in activities prohibited to Parties under this Convention.

2. Each State Party undertakes to destroy any chemical weapons that it owns or possesses anywhere and any other chemical weapons that are located in any place under its jurisdiction or control, in accordance with the provisions of this Convention.

3. Each State Party undertakes to destroy any chemical weapons production facilities that it owns or possesses anywhere and any other chemical weapons production facilities that are located in any place under its jurisdiction or control, in accordance with the provisions of this Convention.

ARTICLE III

DECLARATIONS

1. Each State Party shall submit to the Organization, not later than 30 days after the Convention enters into force for it, the following declarations:

(a) With respect to chemical weapons:

(i) Whether it owns or possesses any chemical weapons and whether there are any other chemical weapons located in any place under its jurisdiction or control;

(ii) Whether it has on its territory any chemical weapons that are under the ownership or possession of other States and any other chemical weapons that are located in any place under the jurisdiction or control of other States;

(iii) Whether it has transferred or received, directly or indirectly, any chemical weapons since 1 January 1946;

(iv) The precise location, aggregate quantity and detailed inventory of the chemical weapons that it owns or possesses and any other chemical weapons that are located in any place under its jurisdiction or control;

(v) Its general plan for destruction of chemical weapons that it owns or possesses and any other chemical weapons that are located in any place under its jurisdiction or control.

(b) With respect to other toxic munitions and devices:

(i) Whether it owns or possesses any other toxic munitions and devices, and whether there are any other toxic munitions and devices that are located on its territory or in any other place under its jurisdiction or control; and

(ii) The number and types of such other toxic munitions and devices, if known at the time of declaration.

(c) With respect to chemical weapons production facilities:

(i) Specify any chemical weapons production facilities it has owned or possessed and any other chemical weapons production facilities that have been located in any place under its jurisdiction or control, at any time since 1 January 1946;

(ii) Specify any chemical weapons production facilities that have been located on its territory in any place under the jurisdiction or control of other States, at any time since 1 January 1946;

(iii) Specify any transfer or any receipt, directly or indirectly, of any equipment for the production of chemical weapons since 1 January 1946;

(iv) Specify actions to be taken for closure of any chemical weapons production facility it owns or possesses anywhere, and any other chemical weapon production facility that is located in any place under its jurisdiction or control;

(v) Provide its general plan for destruction for any chemical weapons production facility it owns or possesses anywhere, and for any other chemical weapons production facility that is located in any place under its jurisdiction or control;

(vi) Provide its general plan for any temporary conversion of any chemical weapons production facility into a chemical weapons destruction facility.

(d) With respect to other facilities:

(i) The precise location, nature and general scope of activities of any facility or establishment designed, constructed or used at any time since 1 January 1946 primarily for development of chemical weapons, including inter alia, laboratories and test and evaluation sites, which it has owned or possessed at any time since 1 January 1946. Each State Party shall also state the same information for any such facility or establishment that has been located in any place under its jurisdiction or control at any time since 1 January 1946; and

(ii) Whether there are within its territory or any other place under its jurisdiction or control facilities required to be declared under Article VI and details of these in accordance with the provisions of that Article and the Verification Annex.

2. Declarations submitted by each State Party under this Article shall be made in accordance with the format set out in the Verification Annex.

ARTICLE IV

CHEMICAL WEAPONS

1. The provisions of this Article shall apply to any and all chemical weapons owned or possessed by a State Party anywhere and to any other chemical weapons that are located in any place under its jurisdiction or control, hereinafter referred to in this Article as "declared chemical weapons".

2. Detailed procedures for the implementation of this Article hereinafter referred to in this Article as "agreed procedures" are set out in the Verification Annex.

3. All locations at which declared chemical weapons are stored or destroyed shall be subject to systematic international on-site verification through on-site inspection and monitoring with on-site instruments, in accordance with the provisions of this Article and the agreed procedures. Plans and information submitted by each State Party under this Article shall also be made in accordance with agreed procedures.

4. Each State Party shall, immediately after the declaration under Article III subparagraph 1 (a) of this Convention, provide access to declared chemical weapons for the purpose of systematic international on-site verification of the declaration through on-site inspection. Thereafter, each State Party shall not remove declared chemical weapons, except to a chemical weapons destruction facility. It shall provide access to such chemical weapons, for the purpose of systematic international on-site verification.

5. Each State Party shall provide access to any chemical weapons destruction facilities and their storage areas that it owns or possesses and to any other chemical weapons destruction facilities and their storage areas that are located in any place under its jurisdiction or control, for the purpose of systematic on-site verification.

6. Each State Party shall submit detailed plans for the destruction of declared chemical weapons no later than 180 days before each annual destruction period begins in accordance with agreed procedures.

7. Each State Party shall:

(a) Destroy all declared chemical weapons, as set out in agreed procedures and in accordance with the agreed rate and sequence of destruction based on the principle of levelling out. Such destruction shall begin not later than one year after the Convention enters into force for a State Party and shall finish not later than 10 years after entry into force of the Convention. A State Party is not precluded from destroying such chemical weapons at a faster rate;

(b) Provide information annually regarding the implementation of its plans for destruction of declared chemical weapons; and

(c) Certify, not later than 30 days after the destruction process has been completed, that all declared chemical weapons have been destroyed.

8. If a State ratifies or accedes to the Convention after the 10 year period for destruction set out in paragraph 7 of this Article, it shall destroy declared chemical weapons as soon as possible. The rate and sequence of destruction for such a State Party shall be determined by the Executive Council.

9. Any chemical weapons discovered by or disclosed to a State Party after the initial declaration of chemical weapons shall be reported, secured and destroyed in accordance with the agreed procedures.

10. Each State Party, during transportation, sampling, storage and destruction of declared chemical weapons, shall assign the highest priority to ensuring the safety of people and to protecting the environment. Each State Party shall transport, sample, store and destroy such chemical weapons in accordance with national standards for safety and emissions.

11. Any State Party which has on its territory chemical weapons that are owned or possessed by a State not a Party to this Convention or any other chemical weapons that are located in any place under the jurisdiction or control of a State not a Party to this Convention, shall either ensure that such chemical weapons are removed from its territory not later than 30 days after the Convention enters into force for it or shall implement the provisions of this Article with regard to the destruction of such chemical weapons.

12. The provisions of this Article and agreed procedures, including paragraph 1, shall also apply to the declaration, inspection and destruction of other toxic munitions and devices as specified in paragraphs 3 (b) or 3 (c) of Article I of this Convention, except that, upon the request of a State Party, the Executive Council shall have the power to modify or suspend the application of the provisions if it determines that so doing would not pose a risk to the objectives of the Convention.

13. Each State Party shall permit the Organization to conduct an on-site inspection to determine whether any other toxic munitions and devices specified in paragraph 3 (a) of Article I of this Convention that it has declared or reported were produced before 1925. Such an inspection shall be permitted no later than 30 days after entry into force of the Convention for the State Party or, if such munitions and devices are discovered after entry into force for it, not more than one year after their discovery. For those other toxic munitions and devices that the Organization determines were produced before 1925, the State Party shall undertake to destroy such munitions and devices as toxic waste and shall provide information annually regarding the measures taken to destroy them. The provisions of this Article, and agreed procedures, including paragraph 1, shall apply to the declaration, inspection and destruction of other toxic munitions and devices as specified in paragraphs 3 (b) and (c) of Article I of this Convention that are not determined to have been produced before 1925.

14. Where:

(a) It is established through consultations between a State Party and the Organization or between a State Party and other States that the State Party has abandoned other toxic munitions and devices specified in paragraph 3 (c) of Article I of this Convention in the territory or in any other place under the jurisdiction or control of another State Party ("the other State Party"); and

(b) That State Party is requested by the other State Party to destroy such other toxic munitions and devices;

that State Party shall provide assistance to that other State Party, bilaterally or through the Secretariat, for the destruction of such other toxic munitions and devices.

15. Each State Party shall meet the costs associated with the destruction of its chemical weapons. Where bilateral or multilateral arrangements for destruction of declared chemical weapons and verification of such destruction already exist, the Organization's verification activities shall be complementary to such agreements.

16. Each State Party undertakes to cooperate with other States Parties that request information or assistance on a bilateral basis or through the Secretariat regarding methods and technologies for the safe and efficient destruction of chemical weapons.

17. The provisions of Articles III and IV shall not apply to chemical weapons that have been disposed of by land burial or ocean dumping before 1 January 1975.

ARTICLE V

CHEMICAL WEAPONS PRODUCTION FACILITIES

1. The provisions of this Article shall apply to any and all chemical weapons production facilities owned or possessed by a State Party and any other chemical weapons production facilities that are located in any place under its jurisdiction or control, hereinafter referred to in this Article as "declared chemical weapons production facilities".

2. Detailed procedures for the implementation of this Article hereinafter referred to in this Article as "agreed procedures" are set out in the Verification Annex.

3. All declared chemical weapons production facilities shall be subject to systematic international on-site verification through on-site monitoring in accordance with the provisions of this Article and agreed procedures. Plans and information submitted by each State Party under this Article shall also be made in accordance with agreed procedures.

4. Each State Party shall cease immediately all activity at declared chemical weapons production facilities, except activity required for closure.

5. No State Party shall construct any new chemical weapons production facilities or modify any existing facilities for the purpose of chemical weapons production or for any other purpose prohibited by this Convention.

6. Each State Party shall immediately after the declaration under paragraph 1(c) of Article III provide access to declared chemical weapons production facilities, for the purpose of systematic international on-site verification.

7. Each State Party shall:

(a) Close, not later than 90 days after the Convention enters into force for it, all declared chemical weapons production facilities, in a manner that will render each facility inoperable, and submit notice of such closure to the Organization; and

(b) Provide access to declared chemical weapons production facilities, subsequent to closure, for the purpose of systematic international on-site verification in order to ensure that the facility remains closed and is subsequently destroyed.

8. Each State Party shall submit detailed plans for destruction of declared chemical weapons production facilities no later than 180 days before the destruction of each facility begins.

9. Each State Party shall:

(a) Destroy all declared chemical weapons production facilities and related facilities and equipment, as set out in agreed procedures in accordance with an agreed rate and sequence of destruction based on the

principle of levelling out, beginning not later than one year after the Convention enters into force for it, and finishing not later than ten years after entry into force of the Convention. A State Party is not precluded from destroying such facilities at a faster rate;

(b) Provide information annually regarding the implementation of its plans for the destruction of all declared chemical weapons production facilities;

(c) Certify, not later than 30 days after the destruction process has been completed, that all declared chemical weapons production facilities have been destroyed.

10. If a State Party ratifies or accedes to the Convention after the ten-year period for destruction set out in paragraph 9 of this Article, it shall destroy declared chemical weapons production facilities as soon as possible. The rate and sequence of destruction for such a State Party shall be determined by the Executive Council.

11. Each State Party, during the destruction of its declared chemical weapons production facilities, shall assign the highest priority to ensuring the safety of people and to protecting the environment. Each State Party shall destroy its facilities in accordance with national standards for safety and emissions.

12. Declared chemical weapons production facilities may be temporarily converted for destruction of chemical weapons in accordance with agreed procedures. Such a converted facility must be destroyed as soon as it is no longer in use for destruction of chemical weapons but, in any case, not later than ten years after entry into force of the Convention.

13. Each State Party shall meet the costs associated with the destruction of its chemical weapons production facilities. Where bilateral or multilateral arrangements for destruction of declared chemical weapons production facilities and verification of such destruction already exist, the Organization's verification activities shall be complementary to such agreements.

ARTICLE VI

ACTIVITIES NOT PROHIBITED UNDER THE CONVENTION

1. Each State Party:

(a) Has the right, subject to the provisions of this Convention, to develop, produce, otherwise acquire, retain, transfer and use toxic chemicals and their precursors for purposes not prohibited under the Convention;

(b) Shall adopt the necessary measures to ensure that toxic chemicals and their precursors are not developed, produced, otherwise acquired, retained, transferred, or used within its territory or in any other place under its jurisdiction or control for purposes prohibited under the Convention.

2. Each State Party shall subject toxic chemicals and their precursors listed in Schedules 1, 2A, 2B and 3 of the Annex on Chemicals, as well as facilities which produce, process or consume these toxic chemicals or precursors and other facilities specified in the Verification Annex, that are located within its territory or in any other place under its jurisdiction or control, to international monitoring as provided in that Annex, in order to verify that activities are in accordance with obligations under the Convention.

3. Not later than 30 days after the entry into force of the Convention for it, each State Party shall declare data on relevant chemicals and facilities in accordance with the Verification Annex.

4. Each State Party shall make annual declarations regarding the relevant chemicals and facilities in accordance with the Verification Annex.

5. Each State Party shall subject chemicals listed in Schedule 1 and facilities declared under the Verification Annex to the measures contained in that Annex.

6. Each State Party shall subject chemicals listed in Schedules 2A, 2B and 3 and facilities declared under the Verification Annex to monitoring by data reporting and international on-site verification in accordance with that Annex.

7. In conducting verification activities, the Secretariat shall avoid undue intrusion into the State Party's chemical activities for purposes not prohibited under the Convention, consistent with the general obligation in Article XI, paragraph 1 of this Convention.

8. For the purpose of on-site verification, each State Party shall grant to the inspectors access to facilities as required in the Verification Annex and the Confidentiality Annex.

9. For the purposes of increasing the transparency of national programmes related to protective purposes, each State Party shall provide annually to the Secretariat information on its programme, in accordance with procedures to be developed by the Preparatory Commission and endorsed by the Conference of the States Parties.

ARTICLE VII

NATIONAL IMPLEMENTATION MEASURES

General undertakings

1. Each State Party shall, in accordance with its constitutional processes, adopt the necessary measures to implement its obligations under this Convention, and, in particular:

(a) To prohibit natural and legal persons anywhere on its territory or in other places under its jurisdiction as recognized by international law from undertaking any activity that a State Party to this Convention is prohibited from undertaking by this Convention;

(b) Not to permit any activity as referred to under (a) in any place under its control; and

(c) To enact penal legislation, which shall extend to such activities as referred to under (a) undertaken anywhere by natural persons, possessing its nationality, in conformity with international law.

2. Each State Party shall cooperate with other States Parties and afford the appropriate form of legal assistance to facilitate the implementation of the obligations under this Article.

3. Each State Party, during the implementation of its obligations under this Convention, shall assign the highest priority to ensuring the safety of people and to protecting the environment, and shall cooperate as appropriate with other States Parties in this regard.

Relations between the State Party and the Organization

4. In order to fulfil its obligations under this Convention, each State Party shall designate or establish a National Authority to serve as the national focal point for effective liaison with the Organization and other States Parties. Each State Party shall notify the Organization of its National Authority at the time that the Convention enters into force for that State Party.

5. States Parties shall inform the Organization of the legislative and administrative measures taken to implement the Convention, including their system for monitoring transfers of chemicals listed in the Annex on Chemicals and equipment and technology for producing such chemicals.

6. States Parties shall treat as confidential and afford special handling to information which they receive in confidence in connection with the implementation of the Convention from the Organization. They shall treat such information exclusively in connection with their rights and obligations under the Convention and in accordance with the provisions set out in the Confidentiality Annex.

7. Each State Party undertakes to cooperate with the Organization in the exercise of all its functions and in particular to provide assistance to the Secretariat.

ARTICLE VIII

THE ORGANIZATION

General Provisions

1. There is hereby established the Organization for the Prohibition of Chemical Weapons to achieve the objectives of this Convention, to ensure the implementation of its provisions, including those for international verification of compliance with it, and to provide a forum for consultation and cooperation among States Parties.

2. All States Parties to this Convention shall be members of the Organization. A State Party shall not be deprived of its membership in the Organization.

3. There are hereby established as the organs of the Organization the Conference of the States Parties, the Executive Council and the Secretariat.

4. The verification activities described in this Convention shall be conducted in the least intrusive manner possible consistent with the timely and efficient accomplishment of their objectives. The Organization shall request only the information and data necessary to fulfil its responsibilities under this Convention.

5. The Organization shall take every precaution to protect the confidentiality of information on civil and military activities and facilities in the implementation of the Convention and, in particular, shall abide by the provisions set out in the Confidentiality Annex. Information related to States Parties' continuing compliance with the Convention that has been authorized by the Director-General, taking into account the general principles for the handling of confidential information as set out in the Annex on Confidentiality, shall be transmitted to all States Parties by the Organization on a routine basis.

6. In undertaking its verification activities the Organization shall consider measures to avoid unnecessary duplication of bilateral or multilateral arrangements for providing confidence in compliance and to make use of advances in science and technology, provided that such measures do not in any way detract from the obligations assumed by States Parties under this Convention.

7. The costs of the Organization's activities shall be paid by States Parties in accordance with the assessment scale adopted by the United Nations for its general budget, adjusted to take into account differences in membership between the United Nations and this Convention, and subject to the provisions of Articles IV and V of this Convention. Financial contributions of States Parties to the Preparatory Commission shall be deducted in an appropriate way from their contributions to the regular budget.

The Conference of the States Parties

Composition, procedure and decision-making

8. The Conference of the States Parties shall be composed of all the States Parties to this Convention. Each State Party shall have one representative in the Conference of the States Parties, who may be accompanied by alternates and advisers.

9. The first session of the Conference of the States Parties shall be convened by the Secretary-General of the United Nations not later than 30 days after the entry into force of the Convention.

10. The Conference of the States Parties shall meet in regular sessions, which shall be held annually unless it decides otherwise. Special sessions shall be convened whenever:

(a) Decided by the Conference of the States Parties;

(b) Requested by the Executive Council; or

(c) Requested by any State Party and supported by one-third of the States Parties.

The special session shall be convened not later than 30 days after receipt of the request by the Director-General of the Secretariat, unless otherwise specified in the request.

11. Sessions shall take place at the headquarters of the Organization unless the Conference of the States Parties otherwise decides.

12. The Conference of the States Parties shall adopt its Rules of Procedure on the basis of proposed Rules developed by the Preparatory Commission.

13. A majority of the members of the Conference of the States Parties shall constitute a quorum.

14. Each member of the Conference of the States Parties shall have one vote.

15. The Conference of the States Parties shall take decisions on questions of procedure, including decisions to convene special sessions of the Conference, by a simple majority of the members present and voting. Decisions on matters of substance should be taken as far as possible by consensus. If consensus is not attainable when an issue comes up for decision, the Chairman shall defer any vote for 24 hours and during this period of deferment shall make every effort to facilitate achievement of consensus, and shall report to the Conference prior to the end of the period. If consensus is not possible at the end of 24 hours, the Conference shall take the decision by a two-thirds majority of members present and voting unless otherwise specified in the Convention. When the issue arises as to whether the question is one of substance or not, that question shall be treated as one of substance unless otherwise decided by the Conference by the majority required for decisions on questions of substance.

Powers and functions

16. The Conference of the States Parties shall be the principal organ of the Organization. It shall oversee the implementation of the Convention, and promote its objectives. It shall review compliance with the Convention. It shall consider any questions, matters or issues within the scope of the Convention including those relating to the powers and functions of the Executive Council and the Secretariat. It may make recommendations and take decisions on any questions, matters or issues within the scope of the Convention raised by a State Party or brought to its attention by the Executive Council.

17. The Conference of the States Parties shall also oversee the activities of the Executive Council and the Secretariat and may issue guidelines in accordance with the Convention to either of them for the exercise of their functions.

18. In addition, the Conference of the States Parties shall:

(a) Consider and adopt at its regular sessions the report of the Organization, consider other reports and consider and adopt the programme and budget of the Organization, submitted by the Executive Council;

(b) Promote international cooperation for peaceful purposes in the field of chemical activities;

(c) Review scientific and technological developments which could affect the operation of the Convention and, in this context, direct the Director-General of the Secretariat to establish a Scientific Advisory Board to enable the Director-General, in the performance of the functions of that office, to render to the Conference of the States Parties, the Executive Council or States Parties independent and specialized advice in areas of science and technology relevant to the Convention;

(d) Review proposed revisions to the scale of financial contributions to be paid by States Parties;

(e) Elect the members of the Executive Council;

(f) Appoint the Director-General of the Secretariat;

(g) Approve the Rules of Procedure of the Executive Council submitted by the latter;

(h) Establish such subsidiary organs as it finds necessary for the exercise of its functions in accordance with this Convention.

The Executive Council

Composition, procedure and decision-making

19. The membership of the Executive Council shall be composed of thirty States Parties according to the formula set out in the Annex on the Composition of the Executive Council. Each State Party shall have the right to serve on the Executive Council.

20. The Executive Council shall:

(a) Meet for regular sessions. Between regular sessions, it shall meet as often as may be required for the fulfilment of its functions;

(b) Select its Chairman;

(c) Elaborate and submit its Rules of Procedure to the Conference of the States Parties for approval; and

(d) Make arrangements for the sessions of the Conference of the States Parties, including the preparation of a draft agenda.

(e) Consider and submit to the Conference of the States Parties the draft programme and budget of the Organization;

(f) Consider and submit to the Conference of the States Parties the draft report of the Organization on the implementation of the Convention, the report on the performance of its own activities and such special reports as it deems necessary or which the Conference of the States Parties may request;

(g) Conclude agreements with States and international organizations on behalf of the Organization, subject to approval by the Conference of the States Parties, and approve agreements relating to the implementation of verification activities, negotiated by the Director-General of the Secretariat with States Parties;

(h) Conclude agreements with States Parties in connection with Article X and supervise the voluntary fund for the purpose of this Article.

21. The Executive Council may request the convening of a special session of the Conference of the States Parties.

22. Each member of the Executive Council shall have one vote.

23. The Executive Council shall take decisions on questions of procedure by a simple majority of all its members. Unless otherwise specified in the Convention, decisions on matters of substance shall be taken as far as possible by consensus. If consensus is not reached when an issue comes up for decision, the Executive Council shall take the decision by a two-thirds majority of all its members. When the issue arises as to whether the question is one of substance or not, that question shall be treated as one of substance unless otherwise decided by the Executive Council by the majority required for decisions on questions of substance.

Powers and functions

24. The Executive Council shall be the executive organ of the Conference of the States Parties, to which it shall be responsible. The Executive Council shall carry out the powers and functions entrusted to it by this Convention, as well as such functions delegated to it by the Conference of the States Parties. In so doing, it shall act in conformity with the recommendations, decisions and guidelines of the Conference of the States Parties and ensure their continuous and proper implementation.

25. The Executive Council shall:

(a) Promote the effective implementation of, and compliance with, the Convention;

(b) Supervise the activities of the Secretariat;

(c) Cooperate with the National Authority of each State Party and facilitate consultations and cooperation among States Parties at their request;

(d) Consider any issue or matter within its competence, affecting this Convention and its implementation, including concerns regarding compliance, and cases of non-compliance, and, as appropriate, notify States Parties and bring the issue or matter to the attention of the Conference of the States Parties;

(e) In its consideration of doubts or concerns regarding compliance and cases of non-compliance, including inter alia, abuse of the rights provided for by the Convention, the Executive Council shall consult with the States Parties involved and, as appropriate, request the State Party to take measures to redress the situation within a specified time. To the extent that the Executive Council considers further action to be necessary, it shall take, inter alia, one or more of the following measures:

(i) Inform all States Parties of the issue;

(ii) Bring the issue to the attention of the Conference of the States Parties;

(iii) Make recommendations to the Conference of the States Parties regarding measures to redress the situation and ensure compliance.

The Executive Council shall in cases of particular gravity and urgency, bring the issue, including relevant information and conclusions directly to the attention of the United Nations General Assembly and the United Nations Security Council. It shall at the same time inform all States Parties of this step.

The Secretariat

26. The Secretariat shall assist the Conference of the States Parties and the Executive Council in the performance of their functions. The Secretariat shall carry out the functions entrusted to it by this Convention and its Annexes, as well as such functions delegated to it by the Conference of the States Parties or the Executive Council.

27. The Secretariat shall consist of a Director-General, who shall be its head and chief administrative officer, inspectors and such scientific, technical and other personnel as may be required. The Director-General of the Secretariat shall be appointed by the Conference of the States Parties upon the recommendation of the Executive Council.

28. The Secretariat shall:

(a) Address and receive communications on behalf of the Organization to and from States Parties on matters pertaining to the implementation of the Convention;

(b) Negotiate the agreements on subsidiary arrangements with States Parties relating to systematic international on-site verification for approval by the Executive Council;

(c) Carry out international verification measures provided for in the Convention;

(d) Prepare and submit to the Executive Council the draft report of the Organization on the implementation of the Convention and such other reports as the Executive Council and/or the Conference of the States Parties may request;

(e) Inform the Executive Council of any problems which have arisen with regard to the execution of its functions, including doubts, ambiguities or uncertainties about compliance with the Convention which have come to its notice in the performance of its verification activities and which it has been unable to resolve or clarify through its consultations with the State Party concerned;

(f) Provide technical assistance and technical evaluation to States Parties in the implementation of the provisions of the Convention, including evaluations of listed and unlisted chemicals;

(g) Prepare and submit to the Executive Council the draft programme and budget of the Organization;

(h) Provide administrative and technical support to the Conference of the States Parties, the Executive Council and other subsidiary organs;

(i) In relation with Article X, paragraph 6, administer the voluntary fund, compile declarations made by States Parties and register, when requested, bilateral agreements concluded between States Parties or a State Party and the Organization for the purposes of Article X.

29. The Inspectorate shall be a unit of the Secretariat and shall act under the supervision of the Director-General of the Secretariat.

30. The Director-General's term of office shall be for four years renewable for one further term, but not thereafter. The Director-General shall be responsible to the Conference of the States Parties and the Executive Council for the appointment of the staff and the organization and functioning of the Secretariat. The paramount consideration in the employment of the staff and in the determination of the conditions of services shall be the necessity of securing the highest standards of efficiency, competence and integrity. Only citizens of States Parties shall serve as the Director-General, as inspectors or as other members of the professional and clerical staff. Due regard shall be paid to the importance of recruiting the staff on as wide a geographical basis as possible. Recruitment shall be guided by the principle that the staff shall be kept to a minimum necessary for the proper execution of its responsibilities.

31. Consequent to paragraph 18(c) above, the Director-General is responsible for the organization and functioning of the Scientific Advisory Board. The Director-General shall, in consultation with States Parties, appoint members of the Scientific Advisory Board who shall serve in their individual capacity. The members of the Board shall be appointed on the basis of their expertise in the particular scientific fields relevant to the implementation of the Convention. The Director-General may also, as appropriate, in consultation with members of the Board, establish temporary working groups of scientific experts to provide recommendations on specific issues. In regard to the above, States Parties may submit lists of experts to the Director-General.

32. In the performance of their duties, the Director-General of the Secretariat, the inspectors and other members of the staff shall not seek or receive instructions from any Government or from any other source external to the Organization. They shall refrain from any action which might reflect on their positions as international officers responsible only to the Conference of the States Parties and the Executive Council.

33. Each State Party shall undertake to respect the exclusively international character of the responsibilities of the Director-General of the Secretariat, the inspectors and the other members of the staff and not seek to influence them in the discharge of their responsibilities.

ARTICLE IX

CONSULTATIONS, COOPERATION AND FACT-FINDING

1. States Parties shall consult and cooperate, directly among themselves, or through the Organization or other appropriate international procedures, including procedures within the framework of the United Nations and in accordance with its Charter, on any matter which may be raised relating to the objectives or the implementation of the provisions of this Convention.

2. States Parties shall make every possible effort to clarify and resolve, through exchange of information and consultations among them, any matter which may cause doubt about compliance with this Convention, or which gives rise to concerns about a related matter which may be considered ambiguous. A Party which receives a request from another Party for clarification of any matter which the requesting Party believes causes such doubts or concerns shall provide the requesting Party, not later than seven days after the request, with information sufficient to answer the doubts or concerns raised along with an explanation on how the information provided resolves the matter. Nothing in this Convention affects the right of any two or more States Parties to arrange by mutual consent for inspections or any other procedures among themselves to clarify and resolve any matter which may cause doubts about compliance or gives rise to concerns about a related matter which may be considered ambiguous. Such arrangements shall not affect the rights and obligations of any State Party under other provisions of this Convention.

Procedure for requesting clarification

3. A State Party shall have the right to request the Executive Council to assist in clarifying any situation which may be considered ambiguous or which gives rise to doubts about the compliance of another State Party with the Convention. The Executive Council shall provide appropriate information and data in its possession relevant to such concerns.

4. A State Party shall have the right to request the Executive Council to obtain clarification from another State Party on any situation which may be considered ambiguous or which gives rise to doubts about its compliance with the Convention. In such a case, the following shall apply:

(a) The Executive Council shall forward the request for clarification to the State Party concerned not later than 24 hours after its receipt;

(b) The requested State Party shall provide the clarification to the Executive Council not later than seven days after the receipt of the requests;

(c) The Executive Council shall forward the clarification to the requesting State Party not later than 24 hours after its receipt;

(d) If the requesting State Party deems the clarification to be inadequate, it shall have the right to request the Executive Council to obtain from the requested State Party further clarification;

(e) For the purpose of obtaining further clarification requested under subparagraph (d) of this paragraph, the Executive Council may establish a group of experts to examine all available information and data relevant to the situation causing the doubt. The group of experts shall submit a factual report to the Executive Council on its findings;

(f) If the requesting State Party considers the clarification obtained under subparagraphs (d) and (e) of this paragraph to be unsatisfactory, it shall have the right to request a special meeting of the Executive Council in which States Parties involved that are not members of the Executive Council shall be entitled to take part. In such a special meeting, the Executive Council shall consider the matter and may recommend any measure it deems appropriate to cope with the situation.

5. A State Party shall also have the right to request the Executive Council to clarify any situation which has been considered ambiguous or has given rise to doubts about its compliance with the Convention. The Executive Council shall respond by providing such assistance as appropriate.

6. The Executive Council shall inform the States Parties about any request for clarification provided in this Article.

7. If the doubts or concerns of a State Party about compliance have not been resolved not later than 60 days after the submission of the request for clarification to the Executive Council, or it believes its doubts warrant urgent consideration, notwithstanding its right to request an on-site challenge inspection, it shall have the right to request a special session of the Conference of the States Parties in accordance with Article VIII. In such a special session, the Conference of the States Parties shall consider the matter and may recommend any measure it deems appropriate to resolve the situation.

Procedure for requesting a fact-finding mission

8. Each State Party shall have the right to request an on-site challenge inspection of any facility or location in any other State Party for the purpose of clarifying and resolving any questions concerning compliance with the provisions of this Convention, and to have this inspection conducted anywhere without delay by an inspection team designated by the Director-General of the Secretariat and in accordance with the Verification Annex. Each State Party shall make requests that are within the scope of the Convention and that are for the sole purpose of determining facts relating to compliance.

9. For the purpose of verifying compliance with the provisions of this Convention, each State Party shall permit the Secretariat to conduct on-site challenge inspections pursuant to paragraph 8 of this Article.

10. Pursuant to a challenge of its facility or location, and in accordance with the procedures provided for in the Verification Annex, a State Party has:

(a) The right and the obligation to make every reasonable effort to demonstrate its compliance with the Convention and, to this end, to ensure that the inspection team is able to fulfil its mandate;

(b) The obligation to provide access within the requested site for the sole purpose of establishing facts relevant to the request; and

(c) The right to take measures to protect sensitive installations, and to prevent disclosure of confidential information, not related to the Convention.

11. The requesting State Party shall have the right to send a representative to observe the conduct of the inspection. The inspected State Party shall then grant access to the observer in accordance with the Verification Annex.

12. The requesting State Party shall present a request for an on-site challenge inspection to the Director-General of the Secretariat. The Director-General shall notify the inspected State Party not less than 12 hours prior to the planned arrival of the inspection team at the point of entry. Contemporaneously, the members of the Executive Council and all the other States Parties shall be informed about the request. At the request of the inspected State Party, the Executive Council shall meet to discuss the request for an on-site challenge inspection. This meeting shall not, under any circumstances, delay the inspection.

Inspections

13. Each State Party is under the obligation to provide in its request all relevant information on the concern regarding compliance, as specified in Part VIII, Section II.A.1 and 2 of the Verification Annex. This information shall form the basis of the issue of the mandate for the conduct of an inspection.

14. Where a request pursuant to the preceding paragraph has been received, the Director-General of the Secretariat shall promptly issue a mandate for the conduct of the inspection. The mandate shall be the requesting State Party's request put into operational terms and shall conform with the request.

15. The inspection shall be conducted in accordance with Part VIII, or in the case of alleged use, Part IX of the Verification Annex. The inspection team shall be guided by the principle of conducting the inspection in the least intrusive manner possible, consistent with the effective and timely accomplishment of its mission.

16. The inspected State Party shall assist the inspection team throughout the inspection and facilitate its task. Should the inspected State Party propose, pursuant to Part VIII, Section III B of the Verification Annex, arrangements to demonstrate compliance, alternative to full and comprehensive access, it shall make every reasonable effort, through consultations with the inspection team, to reach agreement on the modalities for establishing the facts with the aim of demonstrating its compliance.

17. The Director-General of the Secretariat shall promptly transmit the final report of the inspection team to the requesting State Party, to the inspected State Party, to the Executive Council and to all other States Parties. The final report shall contain such factual findings which relate only to the inspection mandate as well as the assessment of the inspection team of the degree and nature of access and cooperation granted to the inspectors and the extent to which this enabled them to fulfil their mandate. The Director-General shall further transmit promptly to the Executive Council the assessment of the requesting State Party, and the inspected State Party, and the views of other States Parties that may be conveyed to the Director-General for that purpose, and then transmit them to all States Parties.

18. The Executive Council shall meet within 48 hours following the presentation of the final report of the inspection team to review the situation and consider any appropriate further action necessary to redress the situation and to ensure compliance with the Convention, including specific proposals to the Conference of the States Parties. The Executive Council may also issue an opinion on whether the inspection was initiated in conformity with the obligation to keep the request within the scope of the Convention and conducted in accordance with the provisions of paragraph 15 above. At such a meeting, the requesting State Party and the inspected State Party shall have the right to participate. The Executive Council shall inform the States Parties of the outcome of its meeting.

ARTICLE X

ASSISTANCE AND PROTECTION AGAINST CHEMICAL WEAPONS

1. For the purposes of this Article, assistance means the coordination and delivery to States Parties of protection against chemical weapons, including, inter alia, the following: detection equipment and alarm systems, protective equipment, decontamination equipment and decontaminants, medical antidotes and treatments and advice on any of these protective measures.

2. Nothing in this Convention shall be interpreted as impeding the right of any State Party to conduct research into, develop, produce, acquire, transfer or use means of protection against chemical weapons, for purposes not prohibited by the Convention.

3. Each State Party undertakes to facilitate, and shall have the right to participate in, the fullest possible exchange of equipment, material and scientific and technological information concerning means of protection against chemical weapons.

4. The Secretariat shall establish, not later than 180 days after entry into force of the Convention and maintain, for the use of any requesting State Party, a data bank containing freely available information concerning various means of protection against chemical weapons as well as such information as may be provided by States Parties.

The Secretariat shall also, within the resources available to it, and at the request of a State Party, provide expert advice and assist the State Party in identifying how its programmes for the development and improvement of a protective capacity against chemical weapons could be implemented.

5. Nothing in this Convention shall be interpreted as impeding the right of States Parties to request and provide assistance bilaterally and to conclude individual agreements with other States Parties concerning the emergency procurement of assistance.

6. Each State Party undertakes to provide assistance through the Organization and to this end to elect:

(a) To contribute to the voluntary fund for assistance to be established by the Conference of the States Parties at its first session; and/or

(b) To conclude, if possible not later than 180 days after the Convention enters into force for it, agreements with the Organization concerning the procurement, upon demand, of assistance; and/or

(c) To declare, not later than 180 days after the Convention enters into force for it, the kind of assistance it might provide in response to an appeal by the Organization. If, however, a State Party subsequently is unable to provide the assistance envisaged in its declaration, it is still under the obligation to provide assistance in accordance with this paragraph.

7. Each State Party has the right to request and, subject to the procedures set out in paragraphs 8, 9 and 10 of this Article, to receive assistance and protection against the use or threat of use of chemical weapons if it considers that:

(a) Chemical weapons have been used against it;

(b) It is threatened by actions or activities by any State which are prohibited for States Parties by Article II of this Convention.

8. The request, substantiated by relevant information, shall be made to the Director-General of the Secretariat, who shall transmit it to the Executive Council and to all States Parties.

The Director-General shall initiate, not later than 24 hours after receipt of the request, an investigation in order to provide foundation for action, complete it within 72 hours and forward a report to the Executive Council. If additional time is required for completion of the investigation, an interim report shall be submitted within the same time-frame. The additional time required for investigation shall not exceed 72 hours and may be extended by similar periods. Reports at the end of each additional period shall be submitted to the Executive Council. The investigation shall, as appropriate and in conformity with the request and the information accompanying it, establish relevant facts related to the request as well as the type and scope of assistance and protection needed.

9. The Executive Council shall meet not later than 24 hours after receiving the first investigation report to consider the situation and shall take a decision by simple majority in the following 24 hours on whether to instruct the Secretariat to provide assistance. The Secretariat shall immediately transmit to all States Parties and relevant international organizations the final investigation report and the decision taken by the Executive Council. When so decided by the Executive Council, the Director-General of the Secretariat shall provide assistance immediately. For this purpose, the Director-General may cooperate with the requesting State Party, other States Parties and relevant international organizations. The States Parties shall make the fullest possible efforts to provide assistance.

10. If the information available from the ongoing investigation or other reliable sources would give sufficient proof that there are victims of use of chemical weapons and immediate action is indispensable, the Director-General of the Secretariat shall notify all States Parties and shall take emergency measures of assistance, using the resources the Conference of the States Parties has placed at the disposal of the Director-General for such contingencies. The Director-General shall keep the Executive Council informed of actions undertaken pursuant to this paragraph.

ARTICLE XI

ECONOMIC AND TECHNOLOGICAL DEVELOPMENT

1. The provisions of this Convention shall be implemented in a manner which avoids, as far as possible, hampering the economic or technological development of States Parties to the Convention and international cooperation in the field of chemical activities for purposes not prohibited under the Convention including the international exchange of scientific and technical information and chemicals and equipment for the production, processing or use of chemicals for purposes not prohibited under the Convention. Accordingly, States Parties shall:

(a) Have the right, pursuant to subparagraph 1 (a) of Article VI, individually or collectively, to conduct research with, to develop, produce, acquire, retain, transfer, and use chemicals, including toxic chemicals and their precursors and, in exercising that right, shall take all necessary measures to ensure that they abide by the obligations set out in Article II.1 (c);

(b) Undertake to facilitate, and have the right to participate in, the fullest possible exchange of chemicals, equipment and scientific and technical information relating to the development and application of chemistry;

(c) Not apply among themselves any restrictions designed to impede development and promotion of scientific and technological knowledge in the field of chemistry; and

(d) Undertake to ensure that national restrictions in the field of chemistry are rendered consistent with the objectives and purposes of this Convention.

2. The provisions of this Article shall be without prejudice to the generally recognized principles and applicable rules of international law.

ARTICLE XII

MEASURES TO REDRESS A SITUATION AND TO ENSURE COMPLIANCE, INCLUDING SANCTIONS

1. The Conference of the States Parties shall take the necessary measures, as set out in paragraphs 2, 3 and 4 of this Article, to ensure compliance with the Convention and to redress and remedy any situation which contravenes the provisions of the Convention. In considering action pursuant to this paragraph, the Conference of the States Parties shall take into account all information and recommendations on the issues submitted by the Executive Council.

2. If a State Party, having been requested by the Executive Council pursuant to paragraph 26 (e) of Article VIII to take measures to redress a situation concerning problems with regard to its compliance, fails to fulfil the request within the specified time, the Conference of the States Parties may - inter alia and upon the recommendation of the Executive Council - restrict or suspend the State Party's rights and privileges under the Convention until it undertakes the necessary action to conform with its obligations under the Convention.

3. In cases where serious damage to the objectives and purposes of the Convention may result from actions prohibited by the Convention, in particular by Article II, the Conference of the States Parties may recommend collective measures including sanctions to States Parties in conformity with international law.

4. The Conference of the States Parties shall in cases of particular gravity, bring the issue, including relevant information and conclusions to the attention of the United Nations General Assembly and the United Nations Security Council.

ARTICLE XIII

PRIVILEGES AND IMMUNITIES

1. The Organization shall enjoy in the territory and in any other place under the jurisdiction or control of a State Party such legal capacity and such privileges and immunities as are necessary for the exercise of its functions.

2. Delegates of States Parties, together with their alternates and advisers, representatives appointed to the Executive Council together with their alternates and advisers, and the Director-General and, subject to the provisions of paragraph 4 of this Article, the staff of the Organization shall enjoy such privileges and immunities as are necessary in the independent exercise of their functions in connection with the Organization.

3. Subject to the provisions of paragraph 4 of this Article, the legal capacity, privileges, and immunities referred to in this Article shall be defined in a separate agreement between the Organization and the States Parties. This agreement shall be developed by the Preparatory Commission.

4. The provisions set out in Part I (III) of the Verification Annex shall apply to the Director-General and the staff of the Secretariat of the Organization.

ARTICLE XIV

RELATION TO OTHER INTERNATIONAL AGREEMENTS

Nothing in this Convention shall be interpreted as in any way limiting or detracting from the obligations assumed by any State under 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 the under the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, signed at London, Moscow and Washington on 10 April 1972.

ARTICLE XV

AMENDMENTS AND MODIFICATIONS

1. Any State Party may propose amendments or modifications to this Convention in accordance with the provisions of this Article.

2. The text of a proposed amendment shall be submitted to the Director-General of the Secretariat for circulation to all States Parties. It shall be considered only by an Amendment Conference. Such an Amendment Conference shall be held no less than 60 days after the circulation of the proposed amendment if one third of the States Parties notify the Director-General not later than 30 days after circulation that they support further consideration of the proposal. The Amendment Conference shall be held immediately following a regular session of the Conference of the States Parties unless the requesting States Parties ask for an earlier meeting.

3. An amendment shall enter into force if it is adopted at the Amendment Conference by a positive vote of a majority of all States Parties to the Convention with no State Party casting a negative vote and is ratified or accepted by all of the States Parties casting a positive vote at the Amendment Conference. Such an amendment shall enter into force for all States Parties 30 days after deposit of all of the instruments of ratification or acceptance of the States Parties casting a positive vote at the Amendment Conference.

4. Notwithstanding the provisions of paragraphs 2 and 3 of this Article, changes that are related only to minor matters of an administrative or technical nature, and are intended to improve the viability and effectiveness of the Convention, may be made to those provisions in the Annexes to this Convention that are expressly identified as subject to such modification. Such modification shall be made in accordance with the procedures set out in paragraph 5 of this Article and shall not be deemed as Amendments subject to ratification or acceptance by States Parties.

5. Proposed modifications shall be made in accordance with the following procedures:

(a) The text of proposed modifications shall be transmitted together with the necessary information to the Director-General of the Secretariat. Additional information for the evaluation of the proposal may be provided by any State Party and the Director-General. The Director-General shall promptly transmit any such proposals and information to all States Parties and the Executive Council;

(b) The Executive Council shall examine the proposal in the light of all information available to it. Not later than 90 days after its receipt, the Executive Council shall transmit its recommendation to all States Parties for consideration. States Parties shall acknowledge receipt within 10 days;

(c) If the Executive Council recommends to all States Parties that the proposal be adopted, it shall be considered approved if no State Party objects to it within 90 days after receipt of the recommendation. If the Executive Council recommends that the proposal be rejected, it shall be considered rejected if no State Party objects to the rejection not later than 90 days after receipt of the recommendation;

(d) If a recommendation of the Executive Council does not meet with the acceptance required under subparagraph (c) of this paragraph, a decision on the proposal shall be taken as a matter of substance by the Conference of the States Parties at its next session;

(e) The Executive Council may itself propose modifications, making use of information provided by the Director-General. In such cases, subparagraphs (c) and (d) of this paragraph shall be applied accordingly;

(f) The Director-General shall notify all States Parties of any decision under this paragraph;

(g) A modification approved pursuant to this procedure shall be binding on all States Parties and shall enter into force 60 days after the date of its notification by the Director-General unless otherwise recommended by the Executive Council or decided by the Conference of the States Parties.

ARTICLE XVI

SETTLEMENT OF DISPUTES

1. Disputes which may arise concerning the application or the interpretation of this Convention shall be settled in accordance with the relevant provisions of this Convention and in conformity with the provisions of the Charter of the United Nations.

2. When a dispute arises between two or more Parties relating to the interpretation or application of this Convention, the Parties concerned shall consult together with a view to the expeditious settlement of the dispute by negotiation or by other peaceful means of the Parties' choice, including recourse to appropriate organs of the Convention and/or, by mutual consent, referral to the International Court of Justice in conformity with the Statute of the Court. The States Parties involved shall keep the Executive Council informed of actions being taken.

3. The Executive Council may contribute to the settlement of a dispute by whatever means it deems appropriate, including offering its good offices.

4. The Conference of the States Parties shall consider questions related to disputes raised by States Parties or brought to its attention by the Executive Council. The Conference of the States Parties shall, as it finds necessary, establish and/or entrust organs with tasks related to the settlement of these disputes in accordance with paragraph 19 (h) of Article VIII.

5. The Conference of the State Parties and/or the Executive Council may ask the Security Council or the General Assembly of the United Nations to request the International Court of Justice to give an advisory opinion on any legal question arising within the scope of the activities of the Organization.

6. This Article is without prejudice to Article IX or to the provisions on measures to redress a situation and to ensure compliance, including sanctions.

ARTICLE XVII

DURATION AND WITHDRAWAL

1. This Convention shall be of unlimited duration.

2. Each State Party 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, the Depositary and the Security Council of the United Nations 90 days in advance. Such notice shall include a statement of the extraordinary events it regards as having jeopardized its supreme interests.

3. The withdrawal of a State Party from this Convention shall not in any way affect the duty of States to continue fulfilling the obligations assumed under general rules of international law, particularly those derived from the Geneva Protocol of 1925.

ARTICLE XVIII

ANNEXES

The Annexes form an integral part of this Convention, and unless expressly provided otherwise, a reference to this Convention includes its Annexes.

ARTICLE XIX

SIGNATURE

This Convention shall be open for signature for all States before its entry into force.

ARTICLE XX

RATIFICATION

This Convention shall be subject to ratification, acceptance or approval by signatory States according to their constitutional processes.

ARTICLE XXI

ACCESSION

Any State that does not sign this Convention before its entry into force shall have the right to accede to it at any time.

ARTICLE XXII

DEPOSITARY

The Secretary-General of the United Nations is hereby designated as the Depositary of this Convention.

ARTICLE XXIII

ENTRY INTO FORCE

1. This Convention shall enter into force two years after the date the Convention becomes open for signature or 30 days after the date of deposit of the sixtieth instrument of ratification, acceptance or approval, whichever date is the later.

2. For States whose instruments of ratification or accession are deposited subsequent to the entry into force of the Convention, it shall enter into force 30 days after the date of deposit of their instrument of ratification or accession.

ARTICLE XXIV

LANGUAGES AND AUTHENTIC TEXTS

This Convention, of which the Arabic, Chinese, English, French, Russian and Spanish texts are equally authentic, shall be deposited with the Secretary-General of the United Nations.

ANNEX 1: VERIFICATION ANNEX

VERIFICATION ANNEX

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PART I: GENERAL

I. DEFINITIONS

"Inspector" means an individual designated by the Director-General of the Secretariat according to the procedures as set out in Part I, Section II of this Verification Annex, to carry out an inspection in accordance with the Convention and this Annex.

"Inspection assistant" means an individual designated by the Director-General of the Secretariat as set out in Part I, Section II of this Annex to assist inspectors in an inspection (e.g. medical, security, administration, interpreters).

"Inspection Team" means the group of inspectors and inspection assistants assigned by the Director-General of the Secretariat to conduct a particular inspection.

"Inspected State Party" means the State Party to the Convention on whose territory or in any place under its jurisdiction or control an inspection pursuant to the Convention, and its annexes takes place, or the State Party to the Convention whose facility on the territory of a host State is subject to such an inspection.

"Inspection Site" means any area or facility at which the inspection is carried out and which is specifically defined in the respective facility agreement or inspection mandate or request expanded by the alternative or final perimeter.

"Perimeter" in case of a challenge inspection means the external boundary of the inspection site, either defined by geographic coordinates or by description on a map.

"Requested Perimeter" means the inspection site perimeter as specified in the inspection request; it shall conform to the requirements of paragraph 3 of Part VIII, Section II.A.

"Alternative Perimeter" means the inspection site perimeter as specified, alternatively to the requested perimeter, by the inspected State Party; it shall conform to the requirements of paragraph 2 of Part VIII, Section II.C.1.

"Final Perimeter" means the final inspection site perimeter as agreed if necessary in negotiations between the inspection team and the challenged State Party; if such negotiations should not lead to an agreement, the alternative perimeter would also constitute the final perimeter.

"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 briefings before and after the verification activities.

"Point of Entry" means the location(s) designated for the in-country arrival of inspection teams for inspections pursuant to the Convention and for their departure after completion of their mission.

"In-Country Period" means the period from the arrival of the inspection team at a point of entry until its departure from the State at a point of entry.

"Host State" means that State on whose territory lie States Parties' facilities subject to inspection under the Convention.

"In-Country Escort" means individuals specified by the inspected State Party and, if appropriate, by the Host State, if they so wish to accompany and assist the inspection team during the in-country period.

"Routine Inspections" means the international, on-site inspection of facilities pursuant to Articles IV, V and VI.

"Initial Inspection" means the first on-site inspection of facilities to verify data declared pursuant to Articles IV, V and VI and this Annex.

"Challenge Inspection" means the inspection of a State Party requested by another State Party pursuant to Article IX, Part II.

"Requesting State Party" means a State Party which has requested a challenge inspection pursuant to Article IX.

"Observer" means a representative of a requesting State Party designated by that State Party to observe a challenge inspection.

"Approved Equipment" means the devices and/or instruments necessary for the performance of the inspection team's duties that have been certified by the Secretariat in accordance with agreed procedures. Such equipment may also refer to the administrative supplies or recording materials that would be used by the inspection team.

"Facility Agreement" means an agreement between a State Party and the Organization relating to a specific facility subject to routine inspection.

"Inspection Mandate" means the instructions issued by the Director-General of the Secretariat to the inspection team for the conduct of a particular inspection.

"Inspection Manual" means additional procedures for the conduct of inspections to be developed by the Director-General, taking into account guidelines drawn up by the Preparatory Commission.

"Specialized Equipment" means:

(a) The main production train, including any reactor or equipment for product synthesis, separation or purification, any equipment used directly for heat transfer in the final technological stage (for example, in reactors or in product separation), as well as any other equipment which has been in contact

with any Schedule 1 chemical, or any other chemical that has no use for purposes not prohibited under the Convention above 1 tonne per year but can be used for chemical weapons purposes, or would be if the facility were operated;

(b) Any chemical weapon filling machines;

(c) Any other equipment specially designed, built or installed for the operation of the facility as a chemical weapons production facility, as distinct from a facility constructed according to prevailing commercial industry standards for facilities not producing super-toxic lethal or corrosive chemicals. (Examples include equipment made of high-nickel alloys or other special corrosion-resistant material; special equipment for waste control, waste treatment, air filtering, or solvent recovery; special containment enclosures and safety shields; non-standard laboratory equipment used to analyse toxic chemicals for chemical weapons purposes; custom-designed process control panels; dedicated spares for Specialized Equipment.)

"Standard Equipment" means:

(a) Production equipment which is generally used in the chemical industry and is not included in the types of Specialized Equipment;

(b) Other equipment commonly used in the chemical industry, such as fire-fighting equipment, guard and security/safety surveillance equipment, medical facilities, laboratory facilities, communications equipment.

The buildings mentioned in the definition of Chemical Weapons Production Facility in Article I cover Specialized Buildings and Standard Buildings.

"Specialized Building" means:

(a) Any building, including underground structures, containing Specialized Equipment in a production or filling configuration;

(b) Any building, including underground structures, which has distinctive features which distinguish it from buildings normally used for chemical production or filling activities not banned by the Convention.

"Standard Building" means any building, including underground structures, constructed to prevailing industry standards for facilities not producing super-toxic lethal or corrosive chemicals.

"Model Agreement" means a document specifying the general form and content for agreements concluded between a State Party and the Organization for fulfilling the verification provisions specified in this Annex to be developed by the Director-General of the Secretariat, taking into account guidelines drawn up by the Preparatory Commission.

"Production" of a chemical means the formation of a chemical through chemical reaction, including rearrangement.

"Processing" of a chemical means a physical process, such as formulation, extraction and purification, in which the chemical is not converted into another chemical.

"Consumption" of a chemical means its conversion via a chemical reaction into another chemical.

"Discrete organic chemical" means any organic chemical compound, identifiable by chemical name, structural formula and, if assigned, Chemical Abstracts Service registry number.

"Organic chemical" means any chemical belonging to the class of chemical compounds consisting of all compounds of carbon except for its oxides, sulphides and metal carbonates.

"Facility" in the context of Article VI means any of the industrial sites as defined below ("plant site", "plant" and "unit").

"Plant site" ("Works", "Factory") means the local integration of one or more plants, with any intermediate administrative levels, which are under one operational control and includes common infrastructure, inter alia:

(a) Administration and other offices;

(b) Repair and maintenance shops;

(c) Medical centre;

(d) Utilities;

(e) Central analytical laboratory;

(f) Research and development laboratories;

(g) Central effluent and waste treatment area; and

(h) Warehouse storage.

"Plant" ("Production facility", "Workshop") means a relatively self-contained area, structure or building containing one or more units with auxiliary and associated infrastructure, which could include, inter alia:

(a) Small administrative section;

(b) Storage/handling areas for feedstock and products;

(c) Effluent/waste handling/treatment area;

(d) Control/analytical laboratory;

(e) First aid service/related medical section; and

(f) Records associated with the movement into, around and from the site, of declared chemicals and its feedstock or product chemicals formed from it, as appropriate.

"Unit" ("Production unit", "Process unit") means the combination of those items of equipment, including vessels and vessel set up, necessary for the production, processing or consumption of a chemical.

II. DESIGNATION OF INSPECTORS AND INSPECTION ASSISTANTS

1. Not later than 30 days after entry into force of the Convention the Secretariat shall communicate, in writing, to all States Parties the names, nationality and rank if applicable, of the Inspectors and inspection assistants proposed for designation, as well as a description of their qualifications and professional experience.

2. Each State Party shall immediately acknowledge receipt of the list of Inspectors and inspection assistants, proposed for designation communicated to it. Any Inspector and inspection assistant included in this list shall be regarded as designated unless a State Party, within 30 days after acknowledgement of receipt of the list declares its non-acceptance.

In the case of non-acceptance, the proposed Inspector or inspection assistant shall not undertake or participate in verification activities within the territory or in any other place under the jurisdiction or control of the State Party which has declared its non-acceptance. The Director-General shall, as necessary, submit further proposals in addition to the original list.

3. Verification activities under the Convention shall only be performed by designated Inspectors and inspection assistants.

4. Subject to the provisions of paragraph 5 below, a State Party has the right at any time to object to an Inspector or inspection assistant who may have been already designated in accordance with the procedures in paragraph 1 above. It shall notify the Secretariat of its objections and include the reason for the objection. Such objections shall come into effect 30 days after receipt by the Secretariat. The Secretariat shall immediately inform the State Party concerned of the withdrawal of the designation of the Inspector or inspection assistant.

5. A State Party that has been notified of an inspection shall not seek to have removed from the inspection team for that inspection any of the designated inspectors or inspection assistants named in the inspection team list.

6. The number of Inspectors or inspection assistants accepted by and designated to a State Party must be sufficient to allow for availability and rotation of appropriate numbers of Inspectors and inspection assistants.

7. If, in the opinion of the Director-General the non-acceptance of proposed Inspectors or inspection assistants impedes the designation of a sufficient number of Inspectors or inspection assistants or otherwise hampers the effective fulfilment of the task of the Inspectorate, the Director-General shall refer the issue to the Executive Council.

8. Whenever amendments to the above-mentioned lists of Inspectors and inspection assistants are necessary or requested, replacement Inspectors and inspection assistants shall be designated in the same manner as set out with respect to the initial list.

9. The members of the inspection team carrying out an inspection of a facility of a State Party located in the territory of another State Party shall be designated in accordance with the procedures set out in this Annex as applied both to the inspected State Party and the host State.

III. PRIVILEGES AND IMMUNITIES

1. Each State Party shall, within 30 days after acknowledgement of receipt of the list of Inspectors and inspection assistants or of changes thereto, provide multiple entry/exit and/or transit visas and other such documents to enable each Inspector or inspection assistant to enter and to remain on the territory of that State Party for the purpose of carrying out inspection activities. These documents shall be valid for at least 24 months from the date of their provision to the Secretariat.

2. To exercise their functions effectively, Inspectors and inspection assistants shall be accorded privileges and immunities as set out in paragraph (a) through (i). Privileges and immunities shall be granted to members of the inspection team for the sake of the Convention and not for the personal benefit of the individuals themselves. Privileges and immunities shall be accorded for the period of transit through non-inspected States Parties, for the entire in-country period, and thereafter with respect to acts previously performed in the exercise of official functions as Inspector or inspection assistant.

(a) The members of the inspection team shall be accorded the inviolability enjoyed by diplomatic agents pursuant to Article 29 of the Vienna Convention on Diplomatic Relations of 18 April 1961.

(b) The living quarters and office premises occupied by the inspection team carrying out continuous monitoring activities pursuant to the Convention shall be accorded the inviolability and protection accorded the premises of diplomatic agents pursuant to Article 30 of the Vienna Convention on Diplomatic Relations.

(c) The papers and correspondence, including records, of the inspection team shall enjoy the inviolability accorded to all papers and correspondence of diplomatic agents pursuant to Article 30 of the Vienna Convention on Diplomatic Relations. The inspection team shall have the right to use codes for their communications with the Secretariat.

(d) Samples and approved equipment carried by members of the inspection team shall be inviolable subject to provisions contained in the Convention and exempt from all customs duties. Hazardous samples shall be transported in accordance with relevant regulations.

(e) The members of the inspection team shall be accorded the immunities accorded diplomatic agents pursuant to paragraphs 1, 2 and 3 of Article 31 of the Vienna Convention on Diplomatic Relations.

(f) The members of the inspection team carrying out prescribed activities pursuant to the Convention, including continuous monitoring activities, shall be accorded the exemption from dues and taxes accorded to diplomatic agents pursuant to Article 34 of the Vienna Convention on Diplomatic Relations.

(g) The members of the inspection team shall be permitted to bring into the territory of the inspected State Party or host State, without payment of any customs duties or related charges, articles for personal use, with the exception of articles the import or export of which is prohibited by law or controlled by quarantine regulations.

(h) The members of the inspection team shall be accorded the same currency and exchange facilities as are accorded to representatives of foreign Governments on temporary official missions.

(i) The members of the inspection team shall not engage in any professional or commercial activity for personal profit on the territory of the inspected State Party or that of the host State.

3. Without prejudice to their privileges and immunities the members of the inspection team shall be obliged to respect the laws and regulations of the inspected State Party or host State and, to the extent that is consistent with the inspection mandate, shall be obliged not to interfere in the internal affairs of that State. If the inspected Party or host State Party considers that there has been an abuse of privileges and immunities specified in this Verification Annex, consultations shall be held between the Party and the Director-General of the Secretariat to determine whether such an abuse has occurred and, if so determined, to prevent a repetition of such an abuse.

4. The immunity from jurisdiction of members of the inspection team may be waived by the Director-General of the Secretariat in those cases when the Director-General is of the opinion that immunity would impede the course of justice and that it can be waived without prejudice to the implementation of the provisions of the Convention. Waiver must always be express.

5. Observers shall be accorded the same privileges and immunities accorded inspectors pursuant to this section, except for that accorded pursuant to paragraph 2 (d) above.

IV. STANDING ARRANGEMENTS

A. Points of entry

1. Each State Party shall designate the points of entry and shall supply the required information to the Secretariat not later than 30 days after the Convention enters into force. These points of entry shall be such that the inspection team can reach any inspection site from at least one point of entry within 12 hours. Locations of points of entry shall be provided to all States Parties by the Secretariat.

2. Each State Party may change the points of entry by giving notice of such change to the Secretariat. Changes shall become effective 15 days after the Secretariat receives such notification to allow appropriate notification to all States Parties.

3. If the Secretariat considers that there are insufficient points of entry for the timely conduct of inspections or that changes to the points of entry proposed by a State Party would hamper such timely conduct of inspections, it shall enter into consultations with the State Party concerned to resolve the problem.

4. In cases where facilities or areas of an inspected State Party are located in the territory of another State Party or where the access from the point of entry to the facilities or areas subject to inspection requires transit through the territory of another State Party, the inspected State Party shall exercise the rights and obligations concerning such inspections in accordance with this Annex. States Parties on whose territory facilities or areas of other States Parties subject to inspection are located shall facilitate the inspection of those facilities and shall provide for the necessary support to enable the inspection team to carry out its tasks in a timely and effective manner. States Parties on whose territory transit is required to inspect facilities or areas of an inspected State Party shall facilitate such transit.

5. In cases where facilities or areas of an inspected State Party are located in the territory of a non-State Party the State Party subject to inspection shall take all necessary measures to ensure that inspections of those facilities can be carried out in accordance with the provisions of this Annex. A State Party that has one or more facilities on the territory of a non-State Party shall take all necessary measures to ensure acceptance by the host State of inspectors and inspection assistants designated to that State Party. If an inspected State Party is unable to ensure access, it shall demonstrate that it took all necessary measures to ensure access.

6. In cases where the facility or areas sought to be inspected are those of a non-State Party located in the territory of a State Party, the State Party shall negotiate access to such facilities or areas with the non-State Party to allow inspections to be conducted in accordance with the provisions of this Annex.

B. Arrangements for use of unscheduled aircraft

1. For inspections pursuant to Article IX and for other inspections where timely travel is not feasible using scheduled commercial transport, an inspection team may need to utilize aircraft owned or chartered by the Secretariat. Within 30 days after entry into force of the Convention, each State Party shall inform the Secretariat of the standing diplomatic clearance number for non-scheduled aircraft transporting inspection teams and equipment necessary for inspection into and out of the territory in which an inspection site is located. Aircraft routings to and from the designated point of entry shall be along established international airways that are agreed upon between the States Parties and the Secretariat as the basis for such diplomatic clearance.

2. When a non-scheduled aircraft is used, the Secretariat shall provide the inspected State Party with a flight plan, through the National Authority, for the aircraft's flight from the last airfield prior to entering the airspace of the State in which the inspection site is located to the point of entry, no less than six hours before the scheduled departure time from that airfield. Such a plan shall be filed in accordance with the procedures of the International Civil Aviation Organisation applicable to civil aircraft. For its owned or chartered flights, the Secretariat shall include in the remarks section of each flight plan the standing diplomatic clearance number and the notation: "Inspection aircraft. Priority clearance processing required".

3. 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 State Party or host State Party shall ensure that the flight plan filed in accordance with paragraph 2 of this section is approved so that the inspection team may arrive at the point of entry by the estimated arrival time.

4. The inspected State Party shall provide parking, security protection, servicing and fuel as required for the aircraft of the inspection team at the point of entry when such aircraft is owned or under charter to the Secretariat. Such aircraft shall not be liable for landing fees, departure tax, and similar charges. The Secretariat shall bear the cost of such fuel, security and servicing.

C. Administrative arrangements

The inspected State Party shall provide or arrange for the amenities necessary for the inspection team such as communication means, interpretation services to the extent necessary for the performance of interviewing and other tasks, transportation, working space, lodging, meals and medical care of the inspection team. In this regard, the inspected State Party shall be reimbursed by the Organization for such costs incurred by the inspection team.

D. Approved equipment

1. Subject to paragraph 3 of this section there shall be no restriction by the inspected State Party on the inspection team bringing on to the inspection site such approved equipment which the Secretariat has determined to be necessary to fulfil the inspection requirements.

2. The equipment shall be in the custody of the Secretariat and be designated, calibrated and approved by the Secretariat. The Secretariat shall, to the extent possible, select that equipment which is specifically designed for the specific kind of inspection required. Designated and approved equipment shall be specifically protected against unauthorized alteration.

3. The inspected State Party shall have the right, without prejudice to the prescribed time-frames, to inspect the equipment in the presence of inspection team members at the point of entry, i.e., to check the identity of the equipment brought in or removed from the territory of the inspected State Party or host State. To facilitate such identification, the Secretariat shall attach documents and devices to authenticate its designation approval of the equipment. The inspection of the equipment shall also ascertain to the satisfaction of the inspected State Party that the equipment meets the description of the approved equipment for the particular type of inspection. The inspected State Party may exclude equipment not meeting that description or equipment without the above-mentioned authentication documents and devices. Agreed procedures for the inspection of equipment shall be developed by the Preparatory Commission.

4. In cases where the inspection team finds it necessary to use equipment available on site not belonging to the Secretariat and requests the inspected State Party to enable the team to use such equipment, the inspected State Party shall comply with the request to the extent it can.

V. PRE-INSPECTION ACTIVITIES

A. Notification

1. The Director-General of the Secretariat shall notify the State Party prior to the planned arrival of the inspection team at the point of entry and within the prescribed time-frames where specified of its intention to carry out an inspection.

2. Notifications made by the Director-General of the Secretariat shall include the following information:

(a) The type of inspection;

(b) The point of entry;

(c) The date and estimated time of arrival at the point of entry;

(d) The means of arrival at the point of entry;

(e) The names of Inspectors and inspection assistants;

(f) If appropriate, aircraft clearance and special flights;

(g) The name of the observer of the requesting State Party in the case of a challenge inspection.

3. The inspected State Party shall acknowledge the receipt of a notification by the Secretariat of an intention to conduct an inspection immediately upon receipt of such notification.

4. In the case of an inspection of a facility of a State Party located in the territory of another State Party both States Parties shall be simultaneously notified in accordance with paragraphs 1, 2 and 3 of this section.

B. Entry into the territory of the inspected State Party or host State and transfer to the inspection site

1. The State Party or host State Party which has been notified of the arrival of an inspection team, shall ensure its immediate entry into the territory and shall through an in-country escort or by other means do everything in its power to ensure the safe conduct of the inspection team and its equipment and supplies, from its point of entry to the inspection site(s) and to its point of exit.

2. The inspected State Party or host State Party shall as necessary assist the inspection team in reaching the inspection site within 12 hours from the arrival at the point of entry or, in the case of inspections, conducted pursuant to Part VIII of this Annex, from agreement on the final perimeter of the inspection site.

C. Pre-inspection briefing

Upon arrival at the inspection site and prior to the commencement of the inspection, the inspection team shall be briefed, with the aid of maps and other documentation as appropriate, by facility representatives on the facility, the activities carried out there, safety measures and administrative and logistic arrangements necessary for the inspection. The time spent for the briefing shall be limited to the minimum necessary and in any event not exceeding three hours.

VI. CONDUCT OF INSPECTIONS

A. General Rules

1. The members of the inspection team shall discharge their functions in accordance with the articles and annexes of the Convention, this Verification Annex as well as rules established by the Director-General of the Secretariat and facility agreements between States Parties and the Organization.

2. The inspection team dispatched shall strictly observe the inspection mandate issued by the Director-General of the Secretariat. It shall refrain from activities going beyond this mandate.

3. The activities of the inspection team shall be so arranged as to ensure on the one hand the timely and effective discharge of the Inspector's functions and, on the other, the least possible inconvenience to the State concerned and disturbance to the facility or other location inspected. The inspection team shall avoid unnecessarily hampering or delaying the operation of a facility and avoid affecting its safety. In particular, the inspection team shall not operate any facility and shall avoid affecting its safety. If inspectors consider that, to fulfil their mandate, particular operations should be carried out in a facility, they shall request the designated representative of the management of the facility to have them performed. The representative shall carry out the request to the extent possible.

4. In the performance of their duties on the territory of an inspected State Party, the members of the inspection team shall, if the inspected State Party so requests, be accompanied by representatives of this State, but the inspection team must not thereby be delayed or otherwise hindered in the exercise of its functions.

5. Detailed procedures for the conduct of inspections shall be developed by the Preparatory Commission for inclusion in the Inspection Manual.

B. Safety

In carrying out their activities, Inspectors and inspection assistants shall observe safety regulations established at the inspection site, including those for the protection of controlled environments within a facility and for personal safety. In order to implement these requirements, appropriate detailed procedures shall be developed by the Preparatory Commission.

C. Communications

Inspectors shall have the right throughout the in-country period to communicate with the Headquarters of the Secretariat. For this purpose they may use their own, duly certified, approved equipment and/or may request that the inspected State Party or host State Party provide them with access to other telecommunications. The inspection team shall have the right to use its own two-way system of radio communications between personnel patrolling the perimeter and other members of the inspection team.

D. Inspection team and inspected State Party rights

1. The inspection team shall, in accordance with the relevant articles and annexes of this Convention as well as with facility agreements and procedures set out in the Inspection Manual, have the right to unimpeded access to the inspection site. The items to be inspected will be chosen by the inspectors.

2. Inspectors shall have the right to interview any facility personnel in the presence of representatives of the inspected State Party with the purpose of establishing relevant facts. Inspectors shall only request information and

data which are necessary to the conduct of the inspection, and the inspected State Party shall furnish such information upon request. The inspected State Party shall have the right to object to questions posed to the facility personnel if those questions are deemed not relevant to the inspection. If the inspection team chief objects and states their relevance, the questions shall be provided in writing to the Inspected Party for reply. The inspection team may note any refusal to permit interviews or to allow questions to be answered and any explanations given, in that part of the Inspection Report that deals with the co-operation of the Inspected State Party.

3. Inspectors shall have the right to inspect documentation and records they deem relevant to the conduct of their mission.

4. Inspectors shall have the right to have photographs taken at their request by representatives of the inspected State Party. The capability to take instant development photographic prints shall be available.

The inspection team shall determine whether photographs conform to those requested, and if not, repeat photographs shall be taken. The inspection team and the inspected State Party shall each retain one copy of every photograph.

5. The inspected State Party shall have the right to accompany the inspection team at all times during the in-country period and observe all their verification activities.

6. The inspected State Party shall receive copies, at its request, of the information and data gathered about its facility(ies) by the Secretariat.

7. Inspectors shall have the right to request clarifications in connection with ambiguities that arise during an inspection. Such requests shall be made promptly through the representative of the inspected State Party. The representative of the inspected State Party shall provide the inspection team, during the inspection, with such clarification as may be necessary to remove the ambiguity. In the event that questions relating to an object or a building located within the inspection site are not resolved, the object or building shall be photographed for the purpose of clarifying its nature and function. If the ambiguity cannot be removed during the inspection, the Inspectors shall notify the Secretariat immediately. The Inspectors shall include any such unresolved question, relevant clarifications and a copy of any photographs taken in the inspection report.

E. Collection, handling and analysis of samples

1. Representatives of the inspected State Party or of the inspected facility shall take samples at the request of the inspection team in the presence of inspectors. If so agreed in advance with the representatives of the inspected State Party or of the inspected facility, the inspection team may take samples themselves.

2. Where possible, the analysis of samples shall be performed on-site. The inspection team shall have the right to perform on-site analysis of sample

using approved equipment brought by them. At the request of the Inspection Team, the inspected State Party shall, in accordance with agreed procedures, provide assistance for the analysis of samples on-site.

Alternatively, the inspection team may request that appropriate analysis on-site be performed in their presence.

3. The inspected State Party has the right to retain portions of all samples taken or take duplicate samples and be present when samples are analysed on-site.

4. The inspection team shall, if they deem it necessary, transfer samples for analysis off-site at laboratories designated by the Organization.

5. The Director-General of the Secretariat shall have the primary responsibility for the security, integrity and preservation of samples and for ensuring that the confidentiality of samples transferred for analysis off-site is protected. The Director-General shall do so in accordance with procedures developed by the Preparatory Commission for inclusion in the Inspection Manual.

6. When off-site analysis is to be performed samples shall be analysed in at least two designated laboratories. The Secretariat shall ensure the expeditious processing of the analysis. The samples shall be accounted for by the Secretariat and any unused samples or portions thereof shall be returned to the Secretariat.

7. The Secretariat shall compile the results of the laboratory analysis of samples relevant to compliance with the Convention and include them in the final inspection report. The Secretariat shall include in the report detailed information concerning the equipment and methodology employed by the designated laboratories.

F. Extension of Inspection Duration

Periods of inspection may be extended by agreement with the in-country escort.

G. Debriefing

1. Upon completion of an inspection the inspection team shall meet with representatives of the inspected State Party and the personnel responsible for the inspection site to review the preliminary findings of the inspection team and to clarify any ambiguities. The inspection team shall provide to the representatives of the inspected State Party its preliminary findings in written form according to a standardized format together with a list of any samples and copies of written information and data gathered and other material to be taken off site. The document shall be signed by the head of the inspection team. In order to indicate that he has taken notice of the contents of the document the representative of the inspected State Party shall countersign the document. This meeting shall be completed within 24 hours of the completion of the inspection.

VII. DEPARTURE

In the case of inspections conducted pursuant to Articles IV, V, VI and IX, upon completion of the post-inspection procedures, the inspection team shall then leave, as soon as possible, the territory of that State.

VIII. REPORTS

1. Within 10 days after the inspection, Inspectors shall prepare a factual final report on the activities conducted by them and on their findings. It shall only contain facts relevant to compliance with the Convention, as provided for under the inspection mandate. The report shall also provide information as to the manner in which the State Party inspected cooperated with the inspection team. Differing observations made by Inspectors may be attached to the report. The report shall be kept confidential.

2. The final report shall immediately be submitted to the inspected State Party. Any written comments, which the inspected State Party may immediately make on its findings shall be annexed to it. The final report together with annexed comments made by the inspected State Party shall be submitted to the Director-General of the Secretariat not later than 30 days after the inspection.

3. Should the report contain uncertainties, or should co-operation between the National Authority and the Inspectors not measure up to the standards required, the Director-General of the Secretariat shall approach the State Party for clarification.

4. If the uncertainties cannot be removed or the facts established are of a nature to suggest that obligations undertaken under the Convention have not been met, the Director-General of the Secretariat shall inform the Executive Council without delay.

IX. APPLICATION OF GENERAL PROVISIONS

The provisions of this Part shall apply to all inspections conducted pursuant to this Convention, except that where the provisions of this Part differ from the provisions set forth for specific types of inspections in Parts III through IX of this Verification Annex, the latter provisions related to specific types of inspections shall take precedence.

PART II: ROUTINE INSPECTIONS PURSUANT TO ARTICLES IV, V AND VI: GENERAL

I. INITIAL INSPECTIONS AND FACILITY AGREEMENTS

1. Each facility declared and subject to on-site inspection pursuant to Articles IV, V and VI (Part V) shall be liable to receive an initial inspection from the Inspectors promptly after the facility is declared. The purpose of the initial inspection of the facility shall be to verify information provided and to obtain any additional information needed for planning future verification activities at the facilities, including on-site inspections and the use of continuous on-site instruments and to work on the facility agreements.

2. States Parties shall ensure that the verification of declarations and the initiation of the systematic monitoring can be accomplished by the Secretariat at all facilities within the agreed time frames after the Convention enters into force.

3. Each State Party shall conclude a facility agreement with the Organization for each facility declared and subject to on-site inspection pursuant to Articles IV, V, VI (Part V). Except for a chemical weapons destruction facility, these agreements shall be completed within 180 days after the Convention enters into force for the State or after the facility has been declared for the first time. For a chemical weapons destruction facility, the facility agreement shall be completed no less than 11 months before the facility begins operation. The facility agreements shall be based on models for such agreements and provide for detailed arrangements which shall govern inspections at each facility. The Model Agreement shall include provisions to take into account future technological developments.

4. Each facility declared pursuant to Part VI of this Annex shall be liable to receive an initial inspection not later than three years after entry into force of the Convention for the State Party concerned. The question of the requirement for individual facility agreements for plants covered in Part VI of this Annex shall be addressed by the Preparatory Commission, and the recommendations subsequently endorsed by the Conference of the States Parties. Each State Party shall conclude a facility agreement within 180 days after the initial visit for facilities designated as requiring an individual facility agreement.

5. The Secretariat may retain at each site a sealed container for photographs, plans and other information that it may wish to refer to in the course of subsequent inspections.

II. STANDING ARRANGEMENTS

1. Where applicable, the Secretariat shall have the right to instal and use continuous monitoring instruments and systems and seals in conformity with the relevant provisions in the Convention and the facility agreements between States Parties and the Secretariat. Such installation shall take place in the presence of the representatives of the inspected State Party.

2. The inspected State Party shall, in accordance with agreed procedures, have the right to inspect any instrument used or installed by the inspection team and to have it tested in the presence of representatives of the inspected State Party.

3. In order to implement paragraphs 1 and 2 above, appropriate detailed procedures shall be developed by the Preparatory Commission and approved by the Secretariat.

4. The inspection team shall verify during each inspection that the monitoring system functions correctly and that emplaced seals have not been tampered with. In addition, visits to service the monitoring system may be required to perform any necessary maintenance or replacement of equipment, or to adjust the coverage of the monitoring system as required.

5. In the event that the monitoring system indicates any anomaly, the Secretariat shall immediately take action to determine whether this resulted from equipment malfunction or activities at the facility. If, after this examination the problem remains unresolved, the Secretariat shall immediately ascertain the actual situation, including through immediate on-site inspection of, or visit to, the facility if necessary. The Secretariat shall report any such problem immediately after its detection to the State Party which shall assist in its resolution.

III. PRE-INSPECTION ACTIVITIES

1. The inspected State Party shall be notified of routine inspections no less than 24 hours in advance of the planned arrival of the inspection team at the point of entry.

2. The inspected State Party shall be notified of initial inspections no less than 72 hours in advance of the estimated time of arrival of the inspection team at the point of entry. Such notifications shall in addition to the information specified in Part I, Section V A, paragraph 2 also include the specification of the inspection site.

PART III: ROUTINE INSPECTION PURSUANT TO ARTICLE IV: CHEMICAL WEAPONS

I. DECLARATIONS

1. The declaration of chemical weapons by a State Party pursuant to Article III, paragraph 1 (a) (iv), shall include the following:

(a) The aggregate quantity of each chemical declared;

(b) The precise location of each declared chemical weapons storage facility, expressed by:

(i) Name;

(ii) Geographical coordinates; and

(iii) A detailed site diagram.

(c) The detailed inventory for each declared chemical weapons storage facility:

(i) Chemicals defined as chemical weapons in accordance with Article I:

(a) Chemicals shall be declared in accordance with the Schedules specified in the Annex on Chemicals;

(b) For a chemical not listed in the Schedules in the Annex on Chemicals the information required for possible assignment of the chemical to one of the proper Schedules shall be provided, including the toxicity of the pure compound. For a precursor chemical, the toxicity and identity of the principal final reaction product(s) shall be provided;

(c) Chemicals shall be identified by chemical name in accordance with current IUPAC (International Union of Pure and Applied Chemistry) nomenclature, structural formula and Chemical Abstracts Service registry number, if assigned. For a precursor chemical, the toxicity and identity of the principal final reaction product(s) shall be provided;

(d) In cases involving mixtures of two or more chemicals, each chemical shall be identified and the percentage of each shall be provided, and the mixture shall be declared under the category of the most toxic chemical. If a component of a binary chemical weapon consists of a mixture of two or more chemicals, each chemical shall be identified and the percentage of each provided;

(e) Binary chemical weapons shall be declared under the relevant end product within the framework of the agreed categories of chemical weapons. The following supplementary information shall be provided for each type of binary chemical munition/device;

(i) The chemical name of the toxic end product;

(ii) The chemical composition and quantity of each component;

(iii) The actual weight ratio between the components;

(iv) Which component is considered the key component;

(v) The projected quantity of the toxic end product calculated on a stoichiometric basis from the key component, assuming 100 per cent yield. A declared quantity (in tonnes) of the key component intended for a specific toxic end product shall be considered equivalent to the quantity (in tonnes) of this toxic end product calculated on a stoichiometric basis assuming 100 per cent yield.

(f) For multicomponent chemical weapons, the declaration shall be analogous to that envisaged for binary chemical weapons;

(g) For each chemical the form of storage, i.e. munitions, sub-munitions, devices, equipment or bulk containers and other containers shall be declared. For each form of storage the following shall be listed:

(i) Type;

(ii) Size or calibre;

(iii) Number of items; and

(iv) Nominal weight of chemical fill per item.

(h) For each chemical the total weight present at the storage facility shall be declared;

(i) In addition, for chemicals stored in bulk, the percentage purity shall be declared, if known.

2. For each type of unfilled munitions and/or sub-munitions and/or devices and/or equipment, defined as chemical weapons, the information shall include:

(a) The number of items;

(b) The nominal fill volume per item;

(c) The intended chemical fill, if known.

3. Equipment specifically designed for use directly in connection with the employment of munitions, sub-munitions, devices or equipment under paragraphs 1 and 2 above.

4. Chemicals specifically designed for use directly in connection with the employment of munitions, sub-munitions, devices or equipment under paragraphs 1 and 2 above.

5. Detailed procedures for reporting on any chemical weapons on the territory of a State Party which are in any place under the jurisdiction or control of others, or that are possessed or owned by others, including a State not Party to the Convention shall be developed by the Preparatory Commission and subsequently endorsed by the Conference of the States Parties, keeping in mind Article IV, paragraphs 11 and 13.

II. PAST TRANSFERS AND RECEIPTS

1. A State Party that has transferred or received chemical weapons since 1 January 1946 shall declare these transfers or receipts, provided the amount transferred or received exceeded 1 tonne per chemical per year in bulk and/or munition form. This declaration shall be made according to the inventory format in Section I, paragraph 1 (c) above. This declaration shall also indicate the supplier and recipient countries, the timing of the transfers or receipts and, as precisely as possible, the current location of the transferred items. When not all the specified data are available for transfers or receipts of chemical weapons for the period between 1 January 1946 and 1 January 1970, the State Party shall declare whatever information is still available to it and provide an explanation as to why it cannot submit a full declaration.

III. GENERAL PLANS FOR DESTRUCTION OF CHEMICAL WEAPONS

1. The general plan for destruction of chemical weapons submitted pursuant to Article III shall provide an overview of the entire national chemical weapons destruction programme of the State Party and information on the efforts of the State Party to fulfil the destruction requirements contained in the Convention. The plan shall specify:

(a) A general schedule for destruction, giving types and approximate quantities of chemical weapons planned to be destroyed in each year for each destruction facility;

(b) The number of chemical weapons destruction facilities existing or planned to be operated over the destruction period;

(c) For each existing or planned chemical weapons destruction facility:

(i) Name and location; and

(ii) The types and approximate quantities of chemical weapons, and the type (for example, nerve agent or blister agent) and approximate quantity of chemical fill, to be destroyed;

(d) Program and schedule for training personnel for the operation of destruction facilities;

(e) National standards for safety and emissions that the destruction facilities must satisfy;

(f) Information on the development of new methods for destruction of chemical weapons and on the improvement of existing methods;

(g) Cost estimates for destroying the chemical weapons; and

(h) Any issues which could adversely impact on the national destruction programme.

IV. STORAGE FACILITY DESCRIPTION

1. At the time of the submission of its declaration of chemical weapons, in accordance with Article III, a State Party shall provide the Secretariat with the detailed description and location of its storage facility(ies) containing:

(a) Boundary map;

(b) Location of bunkers/storage areas, within the facility;

(c) The detailed inventory of the facility.

V. MEASURES TO SECURE THE STORAGE FACILITY AND STORAGE FACILITY PREPARATION

1. Not later than when submitting its declaration of chemical weapons, a State Party shall take such measures as it considers appropriate to secure its storage facility(ies) and shall prevent any movement of its chemical weapons out of the facility, except their removal for destruction.

2. A State Party shall ensure that its chemical weapons at its storage facility(ies) are configured to allow ready access for verification.

3. While the storage facility remains closed for any movement of chemical weapons out of the facility other than their removal for destruction, activities necessary for maintenance and safety monitoring by national authorities, including standard maintenance of chemical weapons, may continue at the facility.

4. Maintenance activities of chemical weapons shall not include:

(a) Replacement of agent or of munition bodies;

(b) Modification of the original characteristics of munitions, or parts or components thereof.

5. All maintenance activities shall be subject to monitoring by the Secretariat.

VI. DESTRUCTION

A. Principles and methods for destruction of chemical weapons

1. Destruction of chemical weapons means a process by which chemicals are converted in an essentially irreversible way to a form unsuitable for production of chemical weapons, and which in an irreversible manner renders munitions and other devices unusable as such.

2. Each State Party possessing chemical weapons shall determine how it shall destroy them, except that the following processes may not be used: dumping in any body of water, land burial or open-pit burning. It shall destroy chemical weapons only at specifically designated and appropriately designed and equipped facility(ies).

3. The State Party shall ensure that its chemical weapons destruction facility(ies) are constructed and operated in a manner to ensure the destruction of the chemical weapons; and that the destruction process can be verified under the provisions of this Convention.

B. Order of destruction

1. Guidelines

The order of destruction of chemical weapons is based on the obligations specified in Article II and the other Articles of the Convention, including obligations regarding systematic international on-site verification: it takes into account interests of States Parties for undiminished security during the destruction period; confidence-building in the early part of the destruction stage; gradual acquisition of experience in the course of destroying chemical weapons and applicability irrespective of the actual composition of the stockpiles and the methods chosen for the destruction of the chemical weapons. The order of destruction is based on the principle of levelling out.

2. Categories and time-frames

(a) For the purpose of destruction, chemical weapons declared by each State Party are divided into three categories:

Category 1: Chemical weapons on the basis of Schedule 1 chemicals and their parts and components;

Category 2: Chemical weapons on the basis of all other chemicals and their parts and components;

Category 3: Unfilled munitions and devices, and equipment specifically designed for use directly in connection with employment of chemical weapons.

3. Each State Party possessing chemical weapons:

(a) Shall start the destruction of Category 1 chemical weapons not later than one year from the date the Convention enters into force for it, and shall complete the destruction not later than 10 years after the entry into force of the Convention. Taking into account the principle of levelling out, Category 1 chemical weapons shall be destroyed, in equal annual increments, from the beginning of the destruction process until the end of the eighth year after the Convention enters into force; the maximum quantity remaining at the end of the eighth year after the entry into force of the Convention shall not exceed 500 tonnes or 20 per cent of the quantity of chemical weapons declared by the State Party at the entry into force for it, whichever is less. The remaining quantity of Category 1 chemical weapons shall be destroyed in equal annual increments in the following two years. The comparison factor is chemical weapon agent tonnes.

(b) Shall start the destruction of Category 2 chemical weapons not later than one year from the date the Convention enters into force for it and shall complete the destruction not later than five years after the entry into force of the Convention. Category 2 chemical weapons shall be destroyed in equal annual increments throughout the destruction period; the comparison factor for such weapons is the weight of the chemicals within such Category.

(c) Shall start the destruction of Category 3 chemical weapons not later than one year from the date the Convention enters into force for it, and shall complete the destruction not later than five years after the entry into force of the Convention. Category 3 chemical weapons shall be destroyed in equal annual increments throughout the destruction period; the comparison factor for unfilled munitions and devices is expressed in fill volume (m^3) and for equipment in number of items.

Binary chemical weapons

4. For the purposes of the order of destruction, a declared quantity (in tonnes) of the key component intended for a specific toxic end product shall be considered equivalent to the quantity (in tonnes) of this toxic end product calculated on a stoichiometric basis assuming 100 per cent yield.

5. A requirement to destroy a given quantity of the key component shall entail a requirement to destroy a corresponding quantity of the other component, calculated from the actual weight ratio of the components in the relevant type of binary chemical munition/device.

6. If more of the other component is declared than is needed, based on the actual weight ratio between components, then the excess shall be destroyed over the first two years after destruction operations begin.

7. At the end of each subsequent operational year a State Party may retain an amount of the other declared component that is determined on the basis of the actual weight ratio of the components in the relevant type of binary chemical munition/device.

Multicomponent chemical weapons

8. For multicomponent chemical weapons the order of destruction shall be analogous to that envisaged for binary chemical weapons.

C. Detailed plans for destruction

Submission of detailed plans and facility information

The detailed plans submitted to the Secretariat pursuant to Article IV 180 days before each destruction period shall specify for each chemical weapons destruction facility:

(a) Name, address, and location;

(b) A detailed site diagram;

(c) The quantity of each specific type of chemical weapon planned to be destroyed at the facility in the coming year; and

(d) Detailed schedule of activities for the coming year, identifying time allocation to design, construction or modification of the facility, installation of equipment, equipment check-out and operator training, destruction operations for each specific type of chemical weapon, and anticipated periods of inactivity.

2. The inspected State Party shall provide, for each of its chemical weapons destruction facilities, detailed facility information to assist the Secretariat in developing preliminary inspection procedures for use at the facility.

3. The detailed facility information for each destruction facility shall include the following information:

(a) Name, address and location;

(b) Detailed, annotated facility drawings;

(c) Facility design drawings, process drawings, and piping and instrumentation design (P&ID) drawings;

(d) Detailed technical descriptions, including design drawings and instrument specifications, for the equipment required for: removing the chemical fill from the munitions, devices, and containers; temporary storing the drained chemical fill; destroying the chemical agent; and destroying the munitions, devices, and containers;

(e) Detailed technical descriptions of the destruction process, including material flow rates, temperatures and pressures, and designed destruction efficiency;

(f) Design capacity for each specific type of chemical weapon;

(g) A detailed description of the products of destruction and the method of their ultimate disposal;

(h) A detailed technical description of measures to facilitate inspections in accordance with the Convention;

(i) A detailed description of any temporary holding area at the destruction facility that will be used to provide chemical weapons directly to the destruction facility, including site and facility drawings and information on the storage capacity for each specific type of chemical weapon to be destroyed at the facility;

(j) A detailed description of the safety and medical measures in force at the facility;

(k) A detailed description of the living quarters and working premises for the Inspectors; and

(l) Suggested measures for international verification.

4. The State Party shall provide, for each of its chemical weapons destruction facilities, the plant operations manuals, the safety and medical plans, the laboratory operations and quality assurance and control manuals, and environmental permits that have been obtained, except that this shall not include material previously provided.

5. Each State Party shall promptly notify the Secretariat of any developments that could affect inspection activities at its destruction facilities.

6. Agreed deadlines for submission of the information specified in paragraphs 4 and 5 of this section shall be developed by the Preparatory Commission for the approval of the Conference of the States Parties.

7. After a review of the detailed facility information for each destruction facility, the Secretariat, if the need arises, shall enter into consultation with the State Party concerned in order to ensure its chemical weapons destruction facility(ies) is (are) designed to assure the destruction of chemical weapons, to allow advanced planning on how verification measures may be applied and to ensure that the application of verification measures is consistent with proper facility(ies) operation, and that the facility(ies) operation allows appropriate verification.

VII. VERIFICATION

A. International verification of declarations of chemical weapons by on-site inspections

1. The purpose of the international verification of declarations of chemical weapons shall be to confirm through on-site inspections the accuracy of the declarations made in accordance with Article III.

2. The Inspectors shall conduct this verification promptly after a declaration is submitted. They shall, inter alia, verify the quantity and identity of chemicals, types and number of munitions, devices and other equipment.

3. They shall employ, as appropriate, agreed seals, markers or other inventory control procedures to facilitate an accurate inventory of the chemical weapons at each storage facility.

4. As the inventory progresses, Inspectors shall instal such agreed seals as may be necessary to clearly indicate if any stocks are removed, and to ensure the securing of the storage facility during the inventory. After completion of the inventory, such seals shall be removed.

B. Systematic monitoring of storage facilities

1. The purpose of the international systematic monitoring of storage facilities shall be to ensure that no undetected removal of chemical weapons takes place.

2. The international systematic monitoring shall be initiated as soon as possible after the declaration of chemical weapons is submitted and shall continue until all chemical weapons have been removed from the storage facility. It shall be ensured, in accordance with the agreement on subsidiary arrangements, through a combination of monitoring with on-site instruments and systematic verification by international on-site inspections.

3. When all chemical weapons have been removed from the storage facility, the Secretariat shall certify the declaration of the National Authority to that effect. After this certification, the Secretariat shall terminate the international systematic monitoring of the storage facility.

C. Inspections and visits

1. The particular storage facility to be inspected shall be chosen by the Secretariat in such a way as to preclude the prediction of precisely when the facility is to be inspected. During each inspection, the Inspectors will verify the inventory in agreed percentage of bunkers and storage areas.

The guidelines for determining the frequency of systematic on-site inspections are to be elaborated by the Director-General of the Secretariat, taking into account guidelines drawn up by the Preparatory Commission.

2. The Secretariat shall notify the State Party of its decision to inspect or visit the storage facility 48 hours prior to the planned arrival of the inspection team at the facility for systematic inspections or visits. In the event of inspections or visits to resolve urgent problems, this period may be shortened. The Secretariat shall specify the purpose(s) of the inspection or visit.

3. A State Party shall make any necessary preparations for the arrival of the Inspectors and shall ensure their expeditious transportation from their point of entry on the territory of the State Party to the storage facility. The agreement on subsidiary arrangements will specify administrative arrangements for Inspectors.

4. Inspectors shall, in accordance with agreements on subsidiary arrangements:

(a) Have unimpeded access to all parts of the storage facilities including any munitions, devices, bulk containers, or other containers therein. While conducting their activity, Inspectors shall comply with the safety regulations at the facility. The items to be inspected will be chosen by the Inspectors; and

(b) Tag devices and bulk containers and other containers at the facility for eventual sampling at a destruction facility before they are destroyed.

D. Notification

The inspected State Party shall notify, in writing, the inspection team leader at a chemical weapons destruction facility no less than four hours prior to the departure of each shipment of chemical weapons from a chemical weapons storage facility to that destruction facility. This notification shall specify the name of the storage facility, the estimated times of departure and arrival, the specific types and quantities of chemical weapons being transported, whether any tagged items are being moved, and the method of transportation. This notification may include notification of more than one shipment. The inspection team leader shall be promptly notified, in writing, of any changes in this information.

E. International verification of the destruction of chemical weapons

The purpose of verification of destruction of chemical weapons shall be:

(a) To confirm the identity and quantity of the chemical weapons stocks to be destroyed; and

(b) To confirm that these stocks have been destroyed.

F. Review of detailed plans for the verification of the destruction of chemical weapons

1. On the basis of the Convention and the detailed destruction facility information, and as the case may be, on experience from previous inspections, the Secretariat shall prepare a draft plan for inspecting the destruction of chemical weapons at each destruction facility. The plan shall be completed and provided to the State Party for comment no less than 16 months before the facility begins destruction operations pursuant to the agreement. Any differences between the Secretariat and the State Party should be resolved through consultations. Any unresolved matter shall be forwarded to the Executive Council for appropriate action with a view to facilitating the full implementation of the Convention.

2. The Secretariat shall conduct an initial visit to each chemical weapons destruction facility of the State Party, by no less than 14 months before each facility begins destruction operations pursuant to the agreement, to allow it to familiarize itself with the facility and assess the adequacy of the inspection plan.

3. In the case of an existing facility where chemical weapons destruction operations have already been initiated, the State Party shall not be required to decontaminate the facility before the Secretariat conducts an initial visit. The duration of the visit shall not exceed 5 days and the number of visiting personnel shall not exceed 15.

4. The agreed detailed plans for verification, with an appropriate recommendation by the Secretariat, shall be forwarded to the members of the Executive Council for review. The members of the Executive Council shall review the plans with a view to approving them, consistent with verification objectives and obligations under the Convention. It should also confirm that verification schemes for destruction are consistent with verification objectives and are efficient and workable. This review should be completed not less than 60 days before the destruction period.

5. Each member of the Executive Council may consult with the Secretariat on any issues regarding the adequacy of the plan for verification. If there are no objections by any members of the Executive Council, the plan shall be put into action.

6. If there are any difficulties, the Executive Council shall enter into consultations with the State Party to reconcile them. If any difficulties remain unresolved they should be referred to the Conference of the States Parties.

7. The detailed facility agreements for chemical weapons destruction facilities shall specify, taking into account the specific characteristics of the destruction facility and its mode of operation:

(a) Detailed on-site inspection procedures; and

(b) Provisions for continuous monitoring by on-site instruments and human presence.

8. Inspectors shall be granted access to each chemical weapons destruction facility no less than 120 days before the commencement of the destruction, pursuant to the Convention, at the facility. Such access shall be for the purpose of supervising the installation of the inspection equipment, inspecting this equipment and testing its operation, as well as for the purpose of carrying out a final engineering review of the facility. For the case of an existing facility where chemical weapons destruction operations have already been initiated, destruction operations shall be stopped for the minimum amount of time required, not to exceed 120 days, for installation and testing of the inspection equipment. Depending on the results of the testing and review, the State Party and the Secretariat may agree on additions or changes to the detailed facility agreement for the facility.

G. Chemical weapons storage facilities at chemical weapons destruction facilities

1. The Inspectors shall verify the arrival of the chemical weapons at the destruction facility and shall verify the accuracy of the inventory of the chemical weapons transported and the storing of these chemical weapons. They shall employ, as appropriate, agreed seals, markers or other inventory control procedures to facilitate an accurate inventory of the chemical weapons in this storage facility.

2. As soon and as long as chemical weapons are stored at chemical weapons storage facilities at chemical weapons destruction facilities, these storage facilities shall be subject to international systematic monitoring, as referred to in relevant provisions of paragraph B.2 above, in conformity with the relevant agreements on subsidiary arrangements.

3. At the end of an active destruction phase, Inspectors will make an inventory of the chemical weapons that have been removed from the storage facility to be destroyed. They shall verify the accuracy of the inventory of the chemical weapons remaining employing inventory control procedures as referred to above under paragraph 1.

H. Systematic international on-site verification of destruction of chemical weapons

1. The Inspectors will be granted access to conduct their activities at the chemical weapons destruction facilities and the chemical weapons storage facilities thereat during the entire active phase of destruction.

2. At each chemical weapons destruction facility, to provide assurance that no chemical weapons are diverted and that the destruction process has been completed, Inspectors shall have the right to monitor by physical presence, observation and agreed equipment:

(a) The receipt of chemical weapons at the facility;

(b) The temporary holding area for chemical weapons and the specific type and quantity of chemical weapons stored in that area;

(c) The specific type and quantity of chemical weapons being destroyed;

(d) The process of destruction;

(e) The end product of destruction;

(f) The mutilation of metal parts; and

(g) The integrity of the destruction process and of the facility as a whole.

3. Inspectors shall have the right to tag, for sampling, munitions, devices, or containers located in the temporary holding areas at the chemical weapons destruction facilities.

4. To the extent that it meets inspection requirements, information from routine facility operations, with appropriate data authentication, shall be used for inspection purposes.

5. After the completion of each period of destruction, the Secretariat shall certify the declaration of the National Authority, reporting the completion of destruction of the designated quantity of chemical weapons.

6. Inspectors shall, in accordance with agreements on subsidiary arrangements:

(a) Have unimpeded access to all parts of the destruction facilities, and the storage facilities thereat, any munitions, devices, bulk containers, or other containers, therein. The items to be inspected will be chosen by the Inspectors in accordance with the verification plan that has been agreed to by the State Party and approved by the Executive Council;

(b) Monitor the systematic on-site analysis of samples during the destruction process; and

(c) Receive, if necessary, samples taken at their request from any devices, bulk containers and other containers at the destruction facility or the storage facility thereat.

PART IV: ROUTINE INSPECTION PURSUANT TO ARTICLE V: CHEMICAL WEAPONS PRODUCTION FACILITIES

I. DEFINITIONS

The equipment mentioned in the definition of Chemical Weapons Production Facility in Article I covers Specialized Equipment and Standard Equipment, as set out in the Definitions Section of this Annex.

II. DECLARATIONS

A. Declarations of chemical weapons production facilities

The declaration shall contain for each facility:

1. The name of the facility, its mailing address, its location and the name of its owner.

2. A statement whether it is a facility for the manufacture of chemicals that are defined as chemical weapons or whether it is a facility for the filling of chemical weapons, or both.

3. The date when the construction of the facility was completed and the periods during which any modifications to the facility were made, including the installation of new or modified equipment, that significantly changed the production process characteristics of the facility.

4. The chemicals defined as chemical weapons that were manufactured at the facility; the munitions, devices, and containers that were filled at the facility, and the dates of the beginning and cessation of such manufacture or filling.

(a) For chemicals defined as chemical weapons that were manufactured at the facility, such information shall be expressed in terms of the specific types of chemicals manufactured, indicating the chemical name in accordance with the applicable International Union of Pure and Applied Chemistry nomenclature, structural formula, and the Chemical Abstracts Service Registry number, if applicable, and in terms of the amount of each chemical expressed by weight of chemical in metric tonnes.

(b) For munitions, devices and containers that were filled at the facility, such information shall be expressed in terms of the specific type of chemical weapons filled and the weight of the chemical fill per unit.

5. The production capacity of the chemical weapons production facility.

(a) For a facility where chemical weapons were manufactured, such capacity shall be expressed in terms of the annual quantitative potential for manufacturing a specific substance on the basis of the technological process actually used or, in the case of processes not actually used, planned to be used at the facility.

(b) For a facility where chemical weapons were filled, such capacity shall be expressed in terms of the quantity of chemical that the facility can fill into each specific type of chemical weapon a year.

6. For each chemical weapons production facility that has not been destroyed, a description of the facility including:

(a) A site diagram;

(b) A process flow diagram of the facility; and

(c) An inventory of buildings at the facility, and specialized equipment at the facility and of any spare parts for such equipment.

7. The present status of the facility, stating:

(a) The date when chemical weapons were last produced at the facility;

(b) Whether the facility has been destroyed, including the date and manner of its destruction; and

(c) Whether the facility has been used or modified prior to the date of the entry into force of the Convention for an activity not related to the production of chemical weapons, and if so, information on what modifications have been made, the date such non-chemical weapons related activity began and the nature of such activity, indicating, if applicable, the kind of product.

8. A description of the measures that have been taken or that will be taken by the State Party to inactivate the facility.

9. The normal pattern of activity for safety and security at the inactivated facility.

10. A statement as to whether the facility will be converted for the destruction of chemical weapons and, if so, the dates for such conversions.

B. Declarations of transfers

1. Chemical Weapons Production Equipment means:

(a) Specialized equipment;

(b) Equipment for the production of equipment specifically designed for use directly in connection with chemical weapons employment; and

(c) Equipment designed or used exclusively for producing non-chemical parts for chemical munitions.

2. The declaration shall specify:

(a) Who received/transferred chemical weapons production equipment;

(b) The identity of the equipment;

(c) Date of transfer;

(d) Whether the equipment was destroyed, if known;

(e) Current disposition, if known.

3. A State Party that has transferred or received chemical weapons production equipment since 1 January 1946 shall declare these transfers and receipts in accordance with paragraph 2 above. When not all the specified data are available for the period between 1 January 1946 and 1 January 1970, the State Party shall declare whatever information is still available to it and provide an explanation as to why it cannot submit a full declaration.

C. General Plans

1. For each facility the following information shall be supplied:

(a) Envisaged time-frame for measures to be taken; and

(b) Methods of destruction.

2. In relation to temporary conversion into chemical weapons destruction facility:

(a) Envisaged time-frame for conversion into a destruction facility;

(b) Envisaged time for utilizing the facility as a destruction facility;

(c) Description of the new facility;

(d) Method of destruction of special equipment;

(e) Time-frame for destruction of the converted facility after it has been utilized to destroy chemical weapons;

(f) Method of destruction of the converted facility.

D. Annual declarations on destruction

1. The annual plan for destruction, to be submitted at least 90 days in advance of the coming destruction year, shall specify:

(a) Capacity to be destroyed;

(b) Location of the facilities where destruction will take place;

(c) List of buildings and equipment that will be destroyed at each facility;

(d) Planned method of destruction.

2. The annual report on destruction, to be submitted within 90 days after the previous destruction year shall specify:

(a) Capacity destroyed;

(b) Location of the facilities where destruction took place;

(c) List of buildings and equipment that were destroyed at each facility;

(d) Method of destruction.

E. Declarations with respect to chemical weapons production facilities located in any place under the jurisdiction or control of others on the territory of the State Party

All elements contained in Section II A and D above shall be declared. It is the responsibility of the State Party to make appropriate arrangements with the State that has jurisdiction or control over any place located on the territory of the State Party in which the chemical weapons production facility is located to ensure that the declarations are made. If the State Party is not able to fulfil this obligation, it shall state the reasons thereof.

III. DESTRUCTION

A. Principles and methods for closure, maintenance, temporary conversion and destruction of chemical weapons production facilities

General

Each State Party shall decide on methods to be applied for the destruction of declared chemical weapons production facilities, according to the principles laid down in Article V and in this Annex.

Closure and methods for closing the facility

1. The purpose of the closure of a chemical weapons production facility is to render it inoperable.

2. Agreed measures for closure will be taken by the State Party with due regard to the specific characteristics of each facility. Such measures shall include, inter alia:

(a) Prohibition of occupation of the Specialized Buildings and Standard Buildings of the facility except for agreed activities;

(b) Disconnection of equipment directly related to the production of chemical weapons to include, inter alia, process control equipment and utilities;

(c) Decommissioning of protective installations and equipment used exclusively for the safety of operations of the chemical weapons production facility;

(d) Installation of blind flanges and other devices to prevent the addition of chemicals to, or the removal of chemicals from, any specialized process equipment for synthesis, separation or purification of chemicals defined as a chemical weapon, any storage tank, or any machine for filling chemical weapons; and

(e) Interruption of rail, road and other access routes for heavy transport to the chemical weapons production facility except those required for agreeed activities.

3. While the chemical weapons production facility remains closed, the State Party may continue safety and physical security activities at the facility.

Technical maintenance of chemical weapons production facilities prior to their destruction

1. A State Party may carry out standard maintenance activities only for safety reasons at declared chemical weapons production facilities, including visual inspection, preventive maintenance, and routine repairs.

2. All planned maintenance activities shall be specified in the general and detailed plan for destruction. Maintenance activities shall not include:

(a) Replacement of any process equipment;

(b) Modification of the characteristics of the chemical process equipment;

(c) Production of chemicals of any type.

3. All maintenance activities shall be subject to monitoring by the Secretariat.

Activities related to temporary conversion of chemical weapons production facilities into chemical weapons destruction facilities

1. Measures pertaining to the temporary conversion of chemical weapons production facilities into chemical weapons destruction facilities shall ensure that the regime for the temporarily converted facilities is at least as stringent as the regime for facilities that have not been converted.

2. Chemical weapons production facilities converted into chemical weapons destruction facilities before the Convention enters into force shall be declared under the category of chemical weapons production facilities.

They shall be subject to an initial visit by Inspectors who shall confirm the correctness of the information about those facilities. Verification that the conversion of these facilities was performed in such a manner as to render them inoperable as chemical weapons production facilities shall also be required, and shall fall within the framework of measures provided for the facilities that are to be rendered inoperable within three months after the Convention enters into force.

3. A State Party which intends to carry out a conversion of facilities shall submit to the Secretariat, not later than 30 days after entry into force for it, or not later than 30 days after a decision has been taken for temporary conversion, a general facility conversion plan, and subsequently shall submit annual plans.

4. Should the State Party have the need to convert to a chemical weapons destruction facility an additional chemical weapons production facility that had been closed after the Convention entered into force for it, it shall inform the Secretariat thereof at least 90 days in advance. The Secretariat, in conjunction with the State Party, shall make sure that necessary measures are taken to render that facility, after its conversion, inoperable as a chemical weapons production facility.

5. A facility converted for the destruction of chemical weapons shall not be more fit for resuming chemical weapons production than a facility which has been closed and is under maintenance. Its reactivation shall require no less time.

6. Converted chemical weapons production facilities shall be destroyed not later than 10 years after the Convention enters into force.

7. Any measures for the conversion of any given chemical weapons production facility are facility-specific and shall depend upon its individual characteristics.

8. The set of measures carried out for the purposes of converting a chemical weapons production facility into a chemical weapons destruction facility shall not be less than that which is provided for the disabling of other facilities to be carried out during the three months after the Convention enters into force.

Activities related to destruction

1. Destruction of equipment and buildings covered by the definition of a Chemical Weapons Production Facility

(a) All Specialized Equipment and Standard Equipment shall be physically destroyed.

(b) All Specialized Buildings and Standard Buildings shall be physically destroyed.

2. Facilities for producing unfilled chemical munitions and equipment for chemical weapons employment

(a) Facilities used exclusively for production of: (a) non-chemical parts for chemical munitions or (b) equipment specifically designed for use directly in connection with chemical weapons employment, shall be declared and destroyed. The destruction process and its verification shall be conducted according to the provisions of Article V that govern destruction of chemical weapons production facilities.

(b) All equipment designed or used exclusively for producing non-chemical parts for chemical munitions shall be physically destroyed. Such equipment, which includes specially designed moulds and metal-forming dyes, may be brought to a special location for destruction.

(c) All buildings and standard equipment used for such production activities shall be destroyed or converted for purposes not prohibited under the Convention, with confirmation as necessary through consultations and inspections as provided for under Article IX.

(d) Activities for purposes not prohibited under the Convention may continue while destruction or conversion proceeds.

B. Order of destruction

1. The order of destruction is based on the obligations specified in Article II and the other Articles of the Convention, including obligations regarding systematic international on-site verification; it takes into account interests of States Parties for undiminished security during the destruction period; confidence-building in the early part of the destruction stage; gradual acquisition of experience in the course of destroying chemical weapons production facilities and applicability irrespective of the actual characteristics of the facilities and the methods chosen for their destruction. The order of destruction is based on the principle of levelling out.

2. A State Party shall, for each destruction period, determine which chemical weapons production facilities are to be destroyed and carry out the destruction in such a way that not more than what is specified below remains at the end of each destruction period. A State Party is not precluded from destroying its facilities at a faster pace.

3. The following provisions shall apply to chemical weapons production facilities that produce Schedule 1 chemicals:

(a) Each State Party possessing such facilities shall start the destruction not later than one year from the date the Convention enters into force for it, and shall complete it not later than 10 years after the Convention enters into force. For a State which is a Party at the entry into force of the Convention, this overall period shall be divided into three separate destruction periods, namely, years 2-5, years 6-8, and years 9-10. For States which become a Party after the entry into force of the Convention, the destruction periods shall be adapted, taking into account paragraphs 1 and 2 above;

(b) Annual Production Capacity, calculated in accordance with the definition of Production Capacity, shall be used as the comparison factor for such facilities. It shall be expressed in agent tonnes, taking into account the rules specified for binary chemical weapons;

(c) Appropriate agreed levels shall be established for the end of the eighth year after the Convention enters into force. Production capacity that exceeds the relevant level shall be destroyed in equal increments during the first two destruction periods;

(d) A requirement to destroy a given amount of capacity shall entail a requirement to destroy any other chemical weapons production facility that supplied the Schedule 1 facility or filled the Schedule 1 chemical produced there into munitions or devices;

(e) Chemical weapons production facilities that have been converted temporarily for destruction of chemical weapons shall continue to be subject to the obligation to destroy capacity according to the provisions of the paragraph.

4. Each State Party possessing chemical weapons production facilities not covered in paragraph 3 above shall start the destruction of these facilities not later than one year from the date the Convention enters into force for it, and should complete it not later than five years after the Convention enters into force.

C. Detailed plans for destruction

Submission of detailed plans

1. Six months before destruction of a chemical weapons production facility, a State Party shall provide to the Secretariat the detailed plans for destruction, including proposed measures for verification of destruction referred to in Section III.C.2 (f) below, with respect to, e.g.:

(a) Timing of the presence of the Inspectors at the facility to be destroyed; and

(b) Procedures for verification of measures to be applied to each item on the declared inventory.

2. The detailed plans for destruction of each facility shall contain:

(a) Detailed time schedule of the destruction process;

(b) Layout of the facility;

(c) Process flow diagram;

(d) Detailed inventory of equipment, buildings and other items to be destroyed;

(e) Measures to be applied to each item on the inventory;

(f) Proposed measures for verification;

(g) Security/safety measures to be observed during the destruction of the facility; and

(h) Working and living conditions to be provided for Inspectors.

3. If a State Party intends to convert temporarily a chemical weapons production facility for use in the destruction of chemical weapons, it shall notify the Secretariat not less than 120 days before undertaking any conversion activities. The notification shall:

(a) Specify the name, address, and location of the facility;

(b) Provide a site diagram indicating all structures and areas that will be involved in the destruction of chemical weapons and also identify all structures of the chemical weapons production facility that is to be temporarily converted;

(c) Specify the types of chemical weapons, and the type and quantity of chemical fill to be destroyed;

(d) Specify the destruction method;

(e) Provide a process flow diagram, indicating which portions of the production process and specialized equipment will be converted for the destruction of chemical weapons;

(f) Specify the seals and inspection equipment potentially affected by the conversion, if applicable; and

(g) Provide a schedule identifying the time allocated to design, temporary conversion of the facility, installation of equipment, equipment check-out, destruction operations, and closure.

4. In relation to the destruction of a facility that was temporarily converted for destruction of chemical weapons, information should be provided in accordance with Sections III.C.1 and III.C.2 above.

Review of detailed plans

1. On the basis of the detailed plan for destruction and proposed measures for verification submitted by the State Party, and on experience from previous inspections, the Secretariat shall prepare a plan for verifying the destruction of the facility, consulting closely with the State Party. Any differences between the Secretariat and the State Party concerning appropriate measures should be resolved through consultations. Any unresolved matters shall be forwarded to the Executive Council for appropriate action with a view to facilitating the full implementation of the Convention.

2. To ensure that the provisions of Article V and this Annex are fulfilled, the combined plans for destruction and verification shall be agreed upon between the Executive Council and the State Party. This agreement should be completed 60 days before the planned initiation of destruction.

3. Each member of the Executive Council may consult with the Secretariat on any issues regarding the adequacy of the combined plan for destruction and verification. If there are no objections by any members of the Executive Council, the plan shall be put into action.

4. If there are any difficulties, the Executive Council should enter into consultations with the State Party to reconcile them. If any difficulties remain unresolved they should be referred to the Conference of the States Parties. The resolution of any differences over methods of destruction should not delay the execution of other parts of the destruction plan that are acceptable.

5. If agreement is not reached with the Executive Council on aspects of verification, or if the approved verification plan cannot be put into action, verification of destruction will proceed by the continuous on-site monitoring and presence of Inspectors.

6. Destruction and verification should proceed according to the agreed plan. The verification should not unduly interfere with the destruction process and should be conducted through the presence of on-site Inspectors to witness the destruction.

7. If required verification or destruction actions are not taken as planned, all States Parties should be so informed.

IV. VERIFICATION

A. International verification of declarations of chemical weapons production facilities by initial on-site inspections

1. The Secretariat shall conduct an initial inspection of each chemical weapons production facility in the period between 90 and 120 days after the entry into force of the Convention.

2. The purposes of the initial inspection shall be:

(a) To confirm that the production of chemical weapons has ceased and that the facility has been completely inactivated;

(b) To permit the Secretariat to familiarize itself with the measures that have been taken to cease production of chemical weapons at the facility;

(c) To permit the inspectors to install temporary seals;

(d) To permit the inspectors to confirm the inventory of buildings and specialized equipment;

(e) To obtain information necessary for planning inspection activities at the facility, including use of tamper-indicating seals and other agreed equipment, which shall be installed pursuant to the detailed facility agreement for the facility; and

(f) To conduct preliminary discussions regarding a detailed agreement on inspection procedures at the facility;

3. Inspectors shall employ, as appropriate, agreed seals, markers or other inventory control procedures to facilitate an accurate inventory of the declared items at each chemical weapons production facility.

4. Inspectors shall install such agreed devices as may be necessary to indicate if any resumption of production of chemical weapons occurs or if any declared item is removed. They shall take the necessary precaution not to hinder closure activities by the State Party. Inspectors may return to maintain and verify the integrity of the devices.

5. If, on the basis of the initial inspection, the Director-General believes that additional measures are necessary to inactivate the facility, the Director-General may request, no later than 135 days after the entry into force of the Convention for a State, that such measures be implemented by the State Party no later than 180 days after entry into force of the Convention for it. At its discretion, the State Party may satisfy the request. If it does not satisfy the request, the State Party and the Director-General shall consult to resolve the matter.

B. International verification of chemical weapons production facilities and cessation of their activities

1. The purpose of the international systematic monitoring of a chemical weapons production facility shall be to ensure that no resumption of production of chemical weapons nor removal of declared items would go undetected at this facility.

2. The detailed facility agreement for each chemical weapons production facility shall specify:

(a) Detailed on-site inspection procedures, which may include:

(i) Visual examinations;

(ii) Checking and servicing of seals and other agreed devices, and

(iii) Obtaining and analysing samples;

(b) Procedures for using tamper-indicating seals and other agreed equipment to prevent the undetected reactivation of the facility, which shall specify:

(i) The type, placement, and arrangements for installation; and

(ii) The maintenance of such seals and equipment; and

(c) Other agreed measures.

3. The seals or other agreed equipment provided for in a detailed agreement on inspection measures for that facility shall be placed no later than 240 days after the entry into force of the Convention for a State. Inspectors shall be permitted to visit each chemical weapons production facility for the installation of such seals or equipment.

4. During each calendar year, inspectors shall be permitted to conduct up to four inspections of each chemical weapons production facility.

5. The Director-General of the Secretariat shall notify the State Party of its decision to inspect or visit a chemical weapons production facility 48 hours prior to the planned arrival of the inspection team at the facility for systematic inspections or visits. In the event of inspections or visits to resolve urgent problems, this period may be shortened. The Director-General of the Secretariat shall specify the purpose(s) of the inspection or visit.

6. Inspectors shall, in accordance with agreements on subsidiary arrangements, have unimpeded access to all parts of the chemical weapons production facilities. The items on the declared inventory to be inspected will be chosen by the Inspectors.

7. The guidelines for determining the frequency of systematic on-site inspections are to be elaborated by the Preparatory Commission and subsequently endorsed by the Conference of the States Parties. The particular production facility to be inspected shall be chosen by the Secretariat in such a way as to preclude the prediction of precisely when the facility is to be inspected.

C. International verification of destruction of chemical weapons production facilities

1. The purpose of international verification of destruction of chemical weapons production facilities shall be to confirm that the facility is destroyed in accordance with the obligations under the Convention and that each item on the declared inventory is destroyed in accordance with the agreed detailed plan for destruction.

2. When all items on the declared inventory have been destroyed, the Secretariat shall certify, in writing, the declaration of the State Party to that effect. After this certification, the Secretariat shall terminate the international systematic monitoring of the chemical weapons production facility and will promptly remove all devices and monitoring equipment installed by the Inspectors.

3. After this certification, the State Party will make the declaration that the facility has been destroyed.

D. International verification of temporary conversion of a chemical weapons production facility into a chemical weapons destruction facility

1. No later than 90 days after receiving the initial notification of the intent to convert temporarily a production facility, the inspectors shall have the right to visit the facility to familiarize themselves with the proposed temporary conversion and to study possible inspection measures that will be required during the conversion.

2. No later than 60 days after such a visit, the Secretariat and the State Party shall conclude a transition agreement containing additional inspection measures for the temporary conversion period. The transition agreement shall specify inspection procedures, including the use of seals, monitoring equipment, and inspections, that will provide confidence that no chemical weapons production takes place during the conversion process. This agreement shall remain in force from the beginning of the temporary conversion activity until the facility begins operation as a chemical weapons destruction facility.

3. The State Party shall not remove or convert any portion of the facility, or remove or modify any seal or other agreed inspection equipment that may have been installed pursuant to the Convention or this Annex until after the conclusion of the transition agreement.

4. Once the facility begins operation as a chemical weapons destruction facility, it shall be subject to the provisions of this Annex applicable to chemical weapons destruction facilities. Arrangements for the pre-operation period shall be governed by the transition agreement.

5. During destruction operations the inspectors shall have access to all portions of the temporarily converted production facilities, including those that are not directly involved with the destruction of chemical weapons.

6. Prior to the commencement of work at the facility to convert it temporarily for chemical weapons destruction purposes and after the facility has ceased to function as a facility for chemical weapons destruction, the facility shall be subject to the provisions of this Annex applicable to chemical weapons production facilities.

PART V: ROUTINE INSPECTIONS PURSUANT TO ARTICLE VI: REGIME FOR CHEMICALS ON SCHEDULE 1

I. GENERAL PROVISIONS

1. A State Party shall not produce, acquire, retain or use chemicals on Schedule 1 outside the territories of States Parties and shall not transfer such chemicals outside its territory except to another State Party.

2. A State Party shall not produce, acquire, retain, transfer or use chemicals in Schedule 1 unless:

(a) The chemicals are applied to research, medical, pharmaceutical or protective purposes, and

(b) The types and quantities of chemicals are strictly limited to those which can be justified for such purposes, and

(c) The aggregate amount of such chemicals at any given time for such purposes is equal to or less than one metric tonne, and

(d) The aggregate amount for such purposes acquired by a State Party in any calendar year through production, withdrawal from chemical weapons stocks and transfer is equal to or less than one metric tonne.

II. TRANSFERS

1. A State Party may transfer chemicals on Schedule 1 outside its territory only to another State Party and only for research, medical, pharmaceutical or protective purposes in accordance with paragraph 2 above.

2. Chemicals transferred shall not be retransferred to a third State.

3. Thirty days prior to any transfer to another State Party both States Parties shall notify the Secretariat.

4. Each State Party shall make a detailed annual declaration regarding transfers during the previous calendar year. The declaration shall be submitted within three months after the end of that year and shall for each chemical on Schedule 1 which has been transferred, include the following information:

(a) The chemical name, structural formula and Chemical Abstracts Service Registry Number (if assigned);

(b) The quantity acquired from other States or transferred to other States Parties. For each transfer the quantity, recipient and purpose should be included.

III. PRODUCTION

A. Single Small Scale Facility

1. (a) Each State Party which produces chemicals on Schedule 1 for research, medical, pharmaceutical or protective purposes shall carry out the production at a single small-scale facility approved by the State Party, the only exceptions being those set out in paragraphs 2 and 4 below.

(b) The production at a single small-scale facility shall be carried out in reaction vessels in production lines not configured for continuous operation; the volume of such a reaction vessel shall not exceed 100 litres while the total volume of all reaction vessels with a volume exceeding 5 litres shall not be more than 500 litres.

B. Other Facilities

2. (a) Production of Schedule 1 chemicals in aggregate quantities not exceeding 10 kg per year may be carried out for protective purposes at one facility outside a single small-scale facility.

(b) Production of Schedule 1 chemicals in quantities of more than 100 g per year may be carried out for research, medical or pharmaceutical purposes outside a single small-scale facility in aggregate quantities not exceeding 10 kg per year per facility.

Such facilities shall be approved by the State Party.

3. Each State Party, during production under paragraphs 1 and 2, shall assign the highest priority to ensuring the safety of people and to protecting the environment. Each State Party shall conduct such production in accordance with national standards for safety and emissions.

4. Synthesis of Schedule 1 chemicals for research, medical or pharmaceutical purposes, but not for protective purposes, may be carried out at laboratories in aggregate quantities less than 100 g per year per facility.

IV. SINGLE SMALL-SCALE FACILITY

A. Declarations

1. Initial declarations

Each State Party which plans to operate such a facility shall provide the Secretariat with the location and a detailed technical description of the facility, including an inventory of equipment and detailed diagrams. For existing facilities, this information shall be provided not later than 30 days after the Convention enters into force for the State Party. Information on new facilities shall be provided 180 days before operations are to begin.

2. Advance notifications

Each State Party shall give advance notification to the Secretariat of planned changes related to the initial declaration. The notification shall be submitted not later than 90 days before the changes are to take place.

3. Annual declarations

(1) Each State Party possessing a facility shall make a detailed annual declaration regarding the activities of the facility for the previous calendar year. The declaration shall be submitted within 90 days after the end of that year and shall include:

(a) Identification of the facility

(b) For each chemical on Schedule 1 produced, acquired, consumed or stored at the facility, the following information:

(i) The chemical name, structural formula and Chemical Abstracts Service Registry Number (if assigned);

(ii) The methods employed and quantity produced;

(iii) The name and quantity of precursor chemicals listed on Schedules 1, 2, Part A or 3 used for production of chemicals in Schedule 1;

(iv) The quantity consumed at the facility and the purpose(s) of the consumption;

(v) The quantity received from or shipped to other facilities within the State Party. For each shipment the quantity, recipient and purpose should be included;

(vi) The maximum quantity stored at any time during the year;

(vii) The quantity stored at the end of the year.

(c) Information on any changes at the facility during the year compared to previously submitted detailed technical descriptions of the facility including inventories of equipment and detailed diagrams.

(2) Each State Party possessing a facility shall make a detailed annual declaration regarding the projected activities and the anticipated production at the facility for the coming calendar year. The declaration shall be submitted not later than 90 days before the beginning of that year and shall include:

(a) Identification of the facility

(b) For each chemical on Schedule 1 produced, consumed or stored at the facility, the following information:

(i) The chemical name, structural formula and Chemical Abstracts Service Registry Number (if assigned);

(ii) The quantity anticipated to be produced and the purpose of the production.

(c) Information on any anticipated changes at the facility during the year compared to previously submitted detailed technical descriptions of the facility including inventories of equipment and detailed diagrams.

B. Verification

1. The aim of verification activities at the facility shall be to verify that the quantities of Schedule 1 chemicals produced are correctly declared and, in particular, that their aggregate amount does not exceed one metric tonne.

2. The single small-scale facility shall be subject to systematic international on-site verification, through on-site inspection and monitoring with on-site instruments.

3. The number, intensity, duration, timing and mode of inspections for a particular facility shall be based on the risk to the objectives of the Convention posed by the relevant chemicals, the characteristics of the facility and the nature of the activities carried out there. Guidelines for assessing such risk shall be developed by the Preparatory Commission and subsequently endorsed by the Conference of the States Parties.

4. The purpose of the initial inspection shall be to verify information provided concerning the facility, including verification of the limits on the reaction vessels as required under this Annex.

5. Within 180 days after the entry into force of the Convention each State Party possessing a facility shall conclude an agreement, based on a model agreement, with the Organization, covering detailed inspection procedures for the facility.

6. Each State Party planning to establish such a facility after the entry into force of the Convention shall conclude an agreement, based on a model agreement, with the Organization, covering detailed inspection procedures for the facility before it begins operation or is used.

7. Model agreements shall be developed by the Preparatory Commission and subsequently endorsed by the Conference of the State Parties.

V. "OTHER FACILITIES" COVERED BY SECTION B PARAGRAPH 2 ON PRODUCTION

A. Declarations

1. Initial declarations

Each State Party shall provide the Secretariat with the name, location and a detailed technical description of each facility or its relevant part(s) as requested by the Secretariat. The facility producing Schedule 1 chemicals for protective purposes shall be specifically identified. For existing facilities, this information shall be provided not later than 30 days after the Convention enters into force for the State Party. Information on new facilities shall be provided not less than 90 days before operations are to begin.

2. Advance notifications

Each State Party shall give advance notification to the Secretariat of planned changes related to the initial declaration. The notification shall be submitted not later than 90 days before the changes are to take place.

3. Annual declarations

(1) Each State Party shall, for each facility, make a detailed annual declaration regarding the activities of the facility for the previous calendar year. The declaration shall be submitted within 90 days after the end of that year and shall include:

(a) Identification of the facility

(b) For each chemical on Schedule 1 the following information:

(i) The chemical name, structural formula and Chemical Abstracts Service Registry Number (if assigned);

(ii) The quantity produced;

And, in case of production for protective purposes, methods employed;

(iii) The name and quantity of precursor chemicals listed on Schedules 1, 2 Part A, or 3 used for production of chemicals in Schedule 1;

(iv) The quantity consumed at the facility and the purpose of the consumption;

(v) The quantity transferred to other facilities within the State Party. For each transfer the quantity, recipient and purpose should be included;

(vi) The maximum quantity stored at any time during the year;

(vii) The quantity stored at the end of the year.

(c) Information on any changes at the facility or its relevant part(s) during the year compared to previously submitted detailed technical description of the facility.

(2) Each State Party shall, for each facility, make a detailed annual declaration regarding the projected activities and the anticipated production at the facility for the coming calendar year. The declaration shall be submitted not later than 90 days before the beginning of that year and shall include:

(a) Identification of the facility

(b) For each chemical on Schedule 1 the following information:

(i) The chemical name, structural formula and Chemical Abstracts Service Registry Number (if assigned);

(ii) The quantity anticipated to be produced, the time period(s) when the production is anticipated to take place and the purposes of the production.

(c) Information on any anticipated changes at the facility or its relevant part(s), during the year compared to previously submitted detailed technical descriptions of the facility.

B. Verification

1. The aim of verification activities at the facility shall be to verify that:

(a) The facility is not used to produce any chemical listed on Schedule 1, except for the declared chemical;

(b) The quantities of the chemical listed on Schedule 1 produced, processed or consumed are correctly declared and consistent with needs for the declared purpose;

(c) The chemical listed on Schedule 1 is not diverted or used for other purposes.

2. The facility shall be subject to systematic international on-site verification through on-site inspection and monitoring with on-site instruments.

3. The number, intensity, duration, timing and mode of inspections for a particular facility shall be based on the risk to the objectives of the Convention posed by the quantities of chemicals produced, the characteristics of the facility and the nature of the activities carried out there. The guidelines for assessing such risk shall be developed by the Preparatory Commission and subsequently endorsed by the Conference of the States Parties.

4. Within 180 days after the entry into force of the Convention each State Party possessing such (a) facility (facilities) shall conclude (an) agreement(s), based on a model for an agreement, with the Organization, covering detailed inspection procedures for the facility (facilities).

5. Each State Party planning to establish such a facility after the entry into force of the Convention shall conclude an agreement with the Organization before the facility begins operation or is used.

VI. NOTIFICATION OF INSPECTION

A State Party shall be notified by the Director-General of the Secretariat of the decision to inspect a facility 24 hours prior to the arrival of the inspection team at the site.

PART VI: ROUTINE INSPECTION PURSUANT TO ARTICLE VI: REGIME FOR CHEMICALS ON SCHEDULE 2 PARTS A AND B AND FACILITIES RELATED TO SUCH CHEMICALS

I. DECLARATIONS

The Initial and Annual Declarations to be provided by a State Party under paragraphs 3 and 4 of Article VI shall include:

A. Declaration of aggregate national data

1. Aggregate national data above 1 tonne for the previous calendar year on the quantities produced, processed, consumed, imported and exported of each chemical listed on Schedule 2, as well as a quantitative specification of import and export for each country involved.

2. Such quantities shall be calculated:

(a) In case of production, processing and consumption on the basis of individual facility data above a threshold of 500 kg;

(b) In case of foreign trade on the basis of individual export and import transactions above a threshold of 500 kg.

B. Declaration of plants

1. General

(a) Initial Declarations are required for:

(i) All plants that produced, processed or consumed during any of the previous three years or are anticipated to produce, process or consume in the next year more than 1 tonne of a chemical listed on Schedule 2;

(ii) Plants that produced at any time since 1 January 1946 a chemical on Schedule 2 for chemical weapons purposes;

(b) Annual Declarations are required for all plants declared under paragraph I (a) above.

2. Declaration on past activities

For each plant, declarations shall include the following information on Schedule 2 chemicals as well as on the plant itself, as well as any other information considered appropriate:

Chemical(s)

(a) The chemical name, common or trade name used by the facility, structural formula, and Chemical Abstracts Service Registry Number (if assigned);

(b) The total amount produced, processed, consumed, imported and exported in the previous calendar year, or in the case of the initial declaration as required in Article VI, paragraph 3, in the three previous calendar years;

(c) The purpose(s) for which the chemical(s) are produced, consumed or processed:

(i) Processing and consumption on site (specify product type);

(ii) Sale or transfer within the country (specify either other domestic industry, trader or other destination, and if possible, final product type);

(iii) Direct export (specify which country);

(iv) Other - specify;

Plant

(d) The name of the plant and the owner, company, or enterprise operating the plant;

(e) The name of the plant site in which the plant is located and the name of the owner, company, or enterprise operating the plant site;

(f) The precise location of the plant (including the address, location of the plant site, location of the plant within the plant site including the specific building or structure number, if any);

(g) The main orientation (purpose) of the plant;

(h) Whether the plant is dedicated to producing, processing or consuming the listed chemical or is multi-purpose;

(i) The approximate production capacity of the plant for the declared Schedule 2 chemical(s);

(j) Which of the following activities are performed with regard to the Schedule 2 chemicals:

(i) Production;

(ii) Processing;

(iii) Conversion;

(iv) Other - specify (e.g. storage).

3. Notification of anticipated activities

The notification relating to anticipated activities as required in paragraph C.1 below shall follow the same format as provided for in the preceding paragraph. In addition, the anticipated time period(s) of production, processing, or consumption are to be included in the notification.

4. Declarations required under paragraph 1 (a) (ii) above shall include the following information:

(i) The chemical name, common or trade name used by the plants for chemical weapon production purposes, structural formula, and Chemical Abstracts Service Registry Number (if assigned);

(ii) The dates the chemical was produced and the quantity produced;

(iii). The location to which the chemical was delivered and the final product produced there (if known).

C. Procedural provisions

Each State Party shall submit, when the Convention enters into force for it:

1. Initial declarations not more than 30 days later (Article VI, paragraph 3);

2. Annual declarations relating to past activities by the end of March for the preceding calendar year, starting in the year which follows the year of entering into force;

3. Annual notifications relating to anticipated activities by the end of October, for the following calendar year. Subsequently planned notifiable activities in the same reporting year shall be notified not later than five days before this additional planned activity begins. The first annual notification is due by the end of the first October during which the Convention has been in force.

D. Information to States Parties

The list of plants declared under this Annex together with the information provided under paragraph 2, parts (a), (d), (f), (g) and (j) shall be transmitted by the Secretariat to all States Parties within 30 days after declarations have become due.

II. VERIFICATION

A. General

1. International on-site verification provided for in paragraph 6 of Article VI shall, under this Annex, be carried out by the Secretariat through routine inspections of those declared plants which have declared producing, processing or consuming or are anticipated to produce, process or consume in the next year more than 10 tonnes of a chemical listed in Schedule 2, and have, after the completion of an initial inspection, been designated for routine on-site inspection. Plants declared under this part of the Verification Annex which, after completion of an initial inspection, are not designated for systematic on-site inspection shall be eligible for inspections pursuant to the regime outlined in Part VII of this Verification Annex.

2. The draft programme and budget of the Organization to be submitted by the Executive Council shall contain, as a separate item, an indicative draft programme and budget for verification under this Annex.

3. The Secretariat shall:

(a) Perform initial inspections of declared plants in accordance with Section B below;

(b) Select plants for systematic inspection in accordance with Section C below.

B. Initial inspections

Each plant specified in paragraph 1 (a) above shall receive an initial inspection not later than three years after entry into force of the Convention. Plants declared under this Annex are eligible for inspections under Part VII of this Verification Annex until the completion of an initial inspection.

C. Routine inspections

1. Having received the initial inspection, each plant designated in paragraph 1 of Section A shall be subject to routine inspections.

2. In selecting particular plants for inspection, the Secretariat shall:

(a) Give due consideration to the risk to the objectives of the Convention posed by the relevant chemical, the characteristics of the plant and the nature of the activities carried out there;

(b) Take into account, on the basis of subsequent declarations, such operational modifications of plants it deems relevant;

(c) Choose the particular plant to be inspected in such a way as to preclude the prediction of precisely when the plant is to be inspected;

(d) Not inspect one plant more than twice per year.

D. Inspection aims

The general aim of inspections shall be to verify that activities are in accordance with obligations under the Convention and with the information provided in declarations on individual plants. Particular aims of inspections at plants declared under this Annex shall include verification of:

(a) Consistency with declarations of levels of production, processing or consumption of Schedule 2 chemicals;

(b) The absence of non-declared chemicals listed in Schedule 1, 2 or 3 above thresholds for declaration;

(c) Non-diversion of chemicals listed on Schedule 2 for purposes prohibited under the Convention.

E. Inspection procedures

1. Inspections shall be carried out in accordance with agreed guidelines and other relevant provisions of this Annex and the Confidentiality Annex.

2. The question of the requirement for individual facility agreements for plants covered in this Section of the Annex shall be addressed by the Preparatory Commission and its recommendations endorsed by the Conference of the States Parties.

3. The areas of a facility to be inspected under subsidiary arrangements may, inter alia, include:

(i) Areas where feed chemicals (reactants) are delivered and/or stored;

(ii) Areas where manipulative processes are performed upon the reactants prior to addition to the reaction vessel;

(iii) Feed lines as appropriate from subparagraph (i) and/or subparagraph (ii) to the reaction vessel together with any associated valves, flow meters, etc.;

(iv) The external aspect of the reaction vessel and its ancillary equipment;

(v) Lines from the reaction vessel leading to long- or short-term storage or for further processing of the designated chemical;

(vi) Control equipment associated with any of the items under subparagraphs (i) to (v);

(vii) Equipment and areas for waste and effluent handling;

(viii) Equipment and areas for disposition of off-specification chemicals.

III. NOTIFICATION OF INSPECTION

A State Party shall be notified by the Director-General of the Secretariat of the decision to inspect a facility 24 hours prior to the arrival of the inspection team at the site.

PART VII: ROUTINE INSPECTIONS PURSUANT TO ARTICLE VI: REGIME FOR CHEMICALS ON SCHEDULE 3, FACILITIES RELATED TO SUCH CHEMICALS, AND OTHER FACILITIES RELEVANT TO THE OBJECTIVES OF THE CONVENTION

I. DECLARATIONS

The Initial and Annual Declarations to be provided by a State Party under paragraphs 3 and 4 of Article VI shall include:

A. Declarations of aggregate national data

1. Annual declarations of aggregate national data for the previous calendar year shall include quantities produced, processed or consumed, imported and exported of each chemical listed on Schedule 3, as well as a quantitative specification of import and export for each country involved.

2. Such quantities shall be calculated:

(a) In case of production, processing and consumption, on the basis of individual plant data above a threshold of 10 tonnes;

(b) In case of foreign trade, on the basis of individual export and import transactions above a threshold of 10 tonnes.

B. Declarations of plant sites

1. General

Declarations are required for all:

(a) Plant sites that produced, processed or consumed during the previous year or are anticipated to produce in the next year more than 100 tonnes of chemicals listed on Schedule 3;

(b) Plant sites that produced at any time since 1 January 1946 a chemical on Schedule 3 for chemical weapons purposes;

(c) Plant sites that produced during the previous year or are anticipated to produce in the next year more than 100 tonnes of discrete organic chemicals, except those that only produce chemicals containing only carbon and hydrogen and those that only refine petroleum;

(d) Plant sites as defined in subparagraph 6 (b) (ii) of Article I.

2. Declarations on past activities

(a) Declarations required under paragraph 1 (a) above shall include the following information on the Schedule 3 chemical(s):

(i) The chemical name, common or trade name used by the facility, structural formula, and Chemical Abstracts Service Registry Number (if assigned);

(ii) The approximate amount of production, processing or consumption of the chemical in the previous calendar year, expressed in the ranges: 30 to 100 tonnes specified to the nearest 10 tonnes, up to 1,000 tonnes specified to the nearest 100 tonnes, and above 1,000 tonnes specified to the nearest 1,000 tonnes;

(iii) Purpose(s) for which the chemical(s) are produced, processed or consumed;

(b) Declarations required under paragraph 1 (b) above shall include the following information:

(i) The chemical name, common or trade name used by the facility, structural formula, and Chemical Abstracts Service Registry Number (if assigned);

(ii) The dates the chemical was produced and the quantity produced;

(iii) The location to which the chemical was delivered and the final product produced there (if known);

(c) Declarations required under paragraph 1 (a), (b) or (c) shall include the following information on the plant site and its plant(s):

(i) The name of the plant site and the owner, company, or enterprise operating the plant site;

(ii) The precise location of the plant site including its address;

(iii) The number of the plants within the same plant site which fall under the definitions of paragraph 1 (a) or (b) above;

(iv) Within the plant site, the number of plants which are declared under Part VI of this Annex;

(v) The number of the plant(s) declared under Part VII of this Annex and of the owner, company or enterprise operating the plant(s) if different from the information provided for the plant site under subparagraph (i) above.

3. Notifications of anticipated activities

The notifications relating to anticipated activities as required in paragraph 1, shall follow the same format as provided for in the preceding paragraph.

C. Procedural provisions

Each State Party shall submit, when the Convention enters into force for it:

1. Initial declarations not more than 30 days later (Article VI, paragraph 3);

2. Annual declarations relating to past activities by the end of March for the preceding calendar year, starting in the year which follows the year after the entry into force;

3. Annual notifications relating to past activities by the end of October for the following calendar year. Subsequently planned notifiable activities in the same reporting year shall be notified not later than five days before this additionally planned activity begins. The first annual notification is due by the end of the first October during which the Convention has been in force.

D. Information to States Parties

The list of all plant sites declared under Part VII of this Annex together with the information provided under paragraph 2 (c) above, shall be transmitted by the Secretariat to all States Parties within 60 days after declarations have become due.

II. VERIFICATION

A. General

1. International on-site verification provided for in paragraph 6 of Article VI shall be carried out by the Secretariat through routine inspections at plant sites declared under Part VII of the Annex.

2. The draft programme and budget of the Organization to be submitted by the Executive Council shall contain, as a separate item, a draft programme and budget for verification under this Part VII of the Annex.

3. The selection of plant sites for inspection shall be performed by the Secretariat. The selection shall be based on random selection from nominations made both by States Parties and by the Secretariat, the latter themselves being randomly made:

(a) Each State Party has the right to nominate plant sites declared under Part VII of this Annex, and plants declared under Part VI of the same Annex that have not completed their initial inspections, or that are not designated for inspection on a routine basis for inspection. The maximum number of such plants and plant sites each State Party may nominate for inspection shall be decided annually by the Executive Council on the basis of estimates provided by the Secretariat in the context of setting an overall annual quota of nominations for inspections. This number shall be commensurate with the verification budget and the number of States Parties.

(b) Nominations for inspection by States Parties shall be communicated to the Secretariat at any time during the year for which the inspections are proposed. The Secretariat shall ensure that the identity of the plants nominated for inspection and the proponents are not revealed.

(c) A State Party may transfer some or all of its nomination quota to the Secretariat. The Secretariat shall use these quotas to nominate, on a random basis, plant sites declared under Part VII of this Annex and those plants declared under Part VI of this same Annex that have not completed their initial inspections, or that are not identified for inspection on a routine basis. The Secretariat shall ensure that in all such transfers the identity of the State Party and the number of nominations offered up are not revealed.

(d) Twice during the year, the Secretariat shall then, from the combined nominations, randomly select the plant sites and plants to be inspected in such a way as to ensure that it is not possible to determine whether the plant or plant site selected was originally proposed by a State Party or whether it was a Secretariat nomination, and also to preclude prediction of when the inspection takes place.

(e) Under Part VII of this Annex, the number of inspections a State Party is obligated to receive per year shall be no more than three plus 5 per cent of the number of its declarations under this Annex.

4. No plant site shall receive more than two inspections per year under the provisions of Part VII of this Annex. This does not limit inspections pursuant to Article IX, Part VI of this Annex, or inspections recommended by the Secretariat to investigate anomalies.

B. Inspection aims

1. At plant sites declared under Part VII of this Annex and those plants declared under Part VI of the same Annex, that are not identified for inspection on a systematic basis, the general aim of inspections shall be to verify that activities of those plants are consistent with obligations under the Convention. In particular, it shall be verified that non-declared chemicals listed in Schedule 1, 2 or 3 are not present at the plant in quantities above thresholds for declarations.

2. Inspections of plant sites declared under Part VII of this Annex shall not lead to a duplication of inspection regimes provided for plants declared under Part VI of this Annex. However, such plants, if located within a plant site inspected under this Annex, may be inspected according to the provisions of this Annex.

C. Inspection procedures

1. Inspection procedures shall be carried out in accordance with the relevant provisions of the Confidentiality Annex.

2. At the beginning of the inspection of the plant site, the inspected State Party shall indicate the precise location of all Schedule 2, Schedule 3 and other relevant plants, and related common infrastructure, including relevant

feedstock storage areas, product storage areas, and central effluent and waste treatment areas. The inspection team shall select for inspection from these plants and areas.

3. The inspection team shall also have the right to visually inspect other parts of the plant site, in consultation with the inspected State Party.

4. If the inspected State Party indicates the existence of a facility, such as a research and development laboratory or an explosives plant, which it wishes to limit access to or exempt from inspection, it is obliged by this Convention to make every reasonable effort, in accordance with the managed access procedures set out in Section III.B of Part VIII of this Annex, to demonstrate that the activities at the facility in question are consistent with all its obligations under the Convention.

5. Details of inspection procedures shall be developed and elaborated by the Preparatory Commission and subsequently endorsed by the Conference of the States Parties.

III. NOTIFICATION OF INSPECTION

A State Party shall be notified by the Director-General of the Secretariat of the decision to inspect a facility 24 hours prior to the arrival of the inspection team at the site.

PART VIII: CHALLENGE INSPECTIONS CONDUCTED PURSUANT TO ARTICLE IX

I. DESIGNATION AND SELECTION OF INSPECTORS AND INSPECTION ASSISTANTS

1. Inspections under Article IX shall only be performed by Inspectors and inspection assistants especially designated for this function. In order to designate Inspectors and inspection assistants for inspections under Article IX, the Director-General of the Secretariat shall, by selecting Inspectors and inspection assistants from among the full-time Inspectors and inspection assistants for routine inspection activities, establish a list of proposed Inspectors and inspection assistants. It shall comprise a sufficiently large number of Inspectors and inspection assistants having the necessary qualification, experience, skill and training, to allow for rotation and availability of Inspectors. The designation of Inspectors and inspection assistants shall follow the procedures under Part I, Section II of this Annex.

2. The Director-General shall select the members of an inspection team also taking into account the circumstances of a particular request. Each inspection team shall be kept to a minimum necessary for the proper execution of its task. No national of the requesting State Party, or the inspected State party shall be a member of the inspection team.

II. PRE-INSPECTION ACTIVITIES

A. Notification

1. The request for an on-site challenge inspection shall be submitted to the Director-General of the Secretariat and shall contain at least the following information:

(a) The State Party to be inspected and, if applicable, the host State;

(b) The point of entry to be used;

(c) The location and size of the inspection site to be specified in accordance with Section II.A paragraph 4 below;

(d) The concerns regarding compliance with the Convention including a specification of the relevant provisions of the Convention about which these concerns have arisen, and of the nature and circumstances of the suspected non-compliance;

(e) The name of the observer of the requesting State Party;

(f) Any additional information the requesting State Party deems necessary.

2. The Director-General of the Secretariat shall within one hour acknowledge to the requesting State Party the receipt of its request.

3. If the requested perimeter specified by the requesting State Party includes both a declared and undeclared facility or location, which are contiguous, separate inspections shall be conducted for both in accordance with the provisions specified for declared and undeclared facilities or locations in this part of the Verification Annex. Such inspections shall constitute separate requests for an on-site challenge inspection, unless the requesting State Party decides to modify its request to cover only one of the facilities or locations covered by its original request prior to the arrival of the inspection team at the point of entry. In the event of two such separate requests, the requesting State Party shall have the right to indicate in its inspection request that more than one inspection team may be required.

4. When the request is presented to the Director-General of the Secretariat by the requesting State Party, the site to be inspected shall be designated as specifically as possible by providing a site diagram related to a reference point with geographic coordinates specified to the nearest second if possible. Where specification to the nearest second is not possible owing to the absence of sufficiently detailed maps, or where it would be helpful, site diagrams shall be supplemented by written descriptions. If possible, the requesting State Party shall also provide a map with a general indication of the inspection site and a diagram specifying precisely the boundaries of the site to be inspected.

5. The requested perimeter shall:

(a) Run at least a 10 metre distance outside any building;

(b) Not cut through existing security enclosures;

(c) Run at least a 10 metre distance outside any existing security enclosures that the requesting State Party intends to include within the requested perimeter.

If the requested perimeter does not conform with the above specifications, it shall be redrawn by the inspection team so as to conform with this provision.

6. The Director-General of the Secretariat shall notify the inspected State Party and the members of the Executive Council not less than 12 hours prior to the planned arrival of the inspection team at the point of entry. The notification shall contain the following information:

(a) The name of the requesting State Party and the name of the observer of the requesting State Party;

(b) The point of entry to be used;

(c) The size of the inspection site;

(d) The size of the inspection team;

(e) Concerns regarding compliance with the Convention, including a specification of the relevant provisions of the Convention about which these concerns have arisen and of the nature and circumstances of the suspected non-compliance;

(f) The site subject to inspection as presented to the Director-General in accordance with Section II A.4 above; and

(g) Relevant information regarding aircraft arrangements.

B. Entry into the territory of the inspected State Party or host State

1. The Director-General of the Secretariat shall dispatch an inspection team as soon as possible after a request is received by the Secretariat. The inspection team shall arrive at the point of entry specified in the request in the minimum time possible, consistent with the provisions of Section II A.6 above.

2. If the requested perimeter is acceptable to the inspected State Party, it shall be designated as the final perimeter as early as possible but in no case later than 36 hours after the inspected State Party has been informed of the location of the challenged site. The inspected State Party shall transport the inspection team to the final perimeter of the inspection site. Such transportation shall be accomplished as soon as practicable, but in any case shall take no more than 12 hours after agreement on the perimeter.

3. For all declared facilities (Articles III, IV, V and VI), the following procedures will apply:

(a) If the requested perimeter is contained within or conforms with the declared perimeter, the declared perimeter shall be considered the final perimeter, with one exception: if agreed by the inspected State Party, the final perimeter may be made smaller to conform with that requested by the requesting State Party;

(b) The inspected State Party shall transport the inspection team to the final perimeter as soon as practicable, but in any case shall ensure their arrival at the perimeter no later than 12 hours after arrival by the inspection team at the point of entry.

C. Alternative Determination of Final Perimeter

1. At the point of entry, if the inspected State Party cannot accept the requested perimeter, it shall propose an alternative perimeter as soon as possible, but in any case no later than 36 hours after having been informed of the location of the challenged site. Differences shall be negotiated between the inspected State Party and the inspection team with the aim of reaching agreement on a final perimeter.

2. The alternative perimeter should be designated as specifically as possible in accordance with Section II A.4 above. It shall include the challenged site and should bear a close relationship to the requested perimeter taking into account natural terrain features and man-made

boundaries. It should bear a close relationship to the surrounding security barrier if such a barrier exists. The inspected State Party could seek to establish such a relationship between the perimeters by one or more of the following means:

(a) An alternative perimeter that does not extend to an area significantly greater than that of the requested perimeter;

(b) An alternative perimeter that is a short, uniform distance from the requested perimeter;

(c) At least part of the requested perimeter is visible from the alternative perimeter.

3. If the alternative perimeter is acceptable to the inspection team, it shall become the final perimeter and the inspection team shall be transported from the point of entry to that perimeter as soon as possible, but in any case no longer than 12 hours after acceptance.

4. If no agreement is reached at the point of entry, within a maximum period of 36 hours after the inspected State Party has been informed of the location of the challenged site, the inspected State Party shall transport the inspection team to a location at the alternative perimeter as soon as practicable, but in any case shall ensure their arrival at the location no later than 12 hours after agreement on, or designation of, the alternative perimeter.

5. Once at the location, the inspected State Party shall provide the inspection team with prompt access to the alternative perimeter to facilitate negotiations and agreement on the final perimeter and access within the final perimeter.

6. If no agreement is reached within 72 hours after the arrival of the inspection team at the location, the alternative perimeter shall be designated the final perimeter.

D. Verification of location

1. The inspection team shall have the right to use location-finding equipment and have such equipment and other approved equipment installed according to its directions. The inspection team may verify its location by reference to local landmarks identified from maps. The inspected State Party is to assist them in this task.

E. Securing the Site

1. No later than 24 hours after the inspected State Party has been informed of the location of the challenged site, it must identify all exit points for all land, air and water vehicles from the requested perimeter and provide the inspection team with evidence of all vehicular exit activity from the requested perimeter. Such evidence must consist of at least one of the following, to be selected by the inspected State Party:

(a) Traffic logs;

(b) Photographs;

(c) Video recordings;

(d) Chemical evidence equipment provided by the inspection team to observe but not interfere with such exit activity;

(e) Allowing one or more members of the inspection team independently to maintain traffic logs, take photographs, make video recordings of exiting traffic, use chemical evidence equipment, and conduct other activities as may be agreed between the inspected State Party and team members.

2. Immediately upon the inspection team's arrival at the alternative perimeter or final perimeter, whichever occurs first, and up to the completion of the inspection, securing the site through exit monitoring procedures by the inspection team shall begin:

(a) The inspection team has the right to inspect on a managed access basis vehicular traffic exiting the site except personnel and personal passenger vehicles exiting. Personnel and vehicles entering the site will not be subject to inspection;

(b) Exit monitoring procedures by the inspection team shall include: identification of vehicular exits; producing traffic logs; taking photographs, and video recordings made by the inspection team;

(c) The inspection team has the right to go, under escort, to any other part of the perimeter to check there is no other exit activity;

(d) Additional procedures as agreed upon by the inspection team and the inspected State Parties could include:

(i) Provisions for shrouding of equipment;

(ii) Use of sensors;

(iii) Random selective access;

(iv) Sample analysis;

(e) The inspected State Party shall make every reasonable effort to demonstrate to the inspection team that any vehicle subject to inspection, to which the inspection team is not granted full access, is not being used for purposes related to the compliance concerns raised in the inspection request.

F. Perimeter Activities

1. As soon as the inspection team arrives at the perimeter as determined at the point of entry, it shall have the right to commence immediately perimeter activities in accordance with the procedures set out in this section, and to continue these activities until the completion of the inspection, or longer at the discretion of the inspected State Party.

2. The inspection team shall have the right at the perimeter as determined at the point of entry around the inspection site to:

(a) Conduct perimeter inspection using monitoring instruments (consistent with Part I, Section IV.D of this Verification Annex);

(b) Take wipes, air, soil or effluent samples; and

(c) Conduct any additional activities which may be agreed between the inspection team and the inspected State Party.

3. The perimeter activities of the inspection team may be conducted within a band around the outside of the perimeter as determined at the point of entry up to 50 meters in width measured outward from the perimeter. If the inspected State Party permits, the inspection team may also have access to any building or structure within the perimeter band. All directional monitoring shall be oriented inward. For declared facilities under Articles III, IV, V and VI, at the discretion of the inspected State Party, the band could run inside, outside, or on both sides of the declared perimeter.

G. Pre-inspection briefing and Inspection Plan

1. To facilitate development of an inspection plan, the inspected State Party shall provide a safety and logistical briefing to the inspection team prior to access. The team shall be briefed by facility representatives, with the aid of maps and other documentation as appropriate, on the activities carried out at the facility, safety measures, and administrative and logistical arrangements necessary for the inspection. The time spent for the briefing shall be limited to the minimum necessary.

2. In the course of the pre-inspection briefing, the inspected State Party may indicate to the inspection team the equipment, documentation or areas it considers sensitive and not related to the purpose of the inspection. The Inspectors shall take note of the proposals. Additionally, personnel responsible for the site will brief the team on the physical layout and other relevant characteristics of the site. The team shall be provided with a map or sketch drawn to scale showing all the structures and significant geographic features at the site. The team shall also be briefed on availability of facility personnel and records.

3. After the pre-inspection briefing the inspection team shall prepare, on the basis of the information available to it, an initial inspection plan which specifies the activities to be carried out by the inspection team, including the specific areas of the site to which access is desired. The inspection plan shall be provided to the representatives of the inspected State Party and the inspection site. Its implementation shall be consistent with the provisions of Section III below, including those related to access and activities.

4. The plan shall specify whether the inspection team will be divided into subgroups. The representatives of the inspected State Party and of the inspected site may suggest modifications to the plan. The inspection team

shall have the right to modify its inspection plan at any time. The inspection briefing as well as the establishment and discussion of the inspection plan shall not exceed the general time-limit provided for in part I of Section V.C of this Verification Annex. Its implementation shall be consistent with the provisions of Section III below, including those related to access and activities.

III. CONDUCT OF INSPECTIONS

A. General Rules

1. The inspected State Party shall provide access within the requested perimeter as soon as possible, but in any case no later than 120 hours after specification of the location of the challenged site in order to clarify the compliance concern raised by the inspection request.

2. Subject to the provisions under section B and this section the inspection team shall have the access at the site it deems necessary for the conduct of its mission.

3. Upon arrival at the final perimeter of facilities declared under Articles IV, V and VI, access shall be granted following the pre-inspection briefing and discussion of the inspection plan which shall be limited to the minimum necessary and, in any event, shall not exceed 3 hours. For facilities declared under Article III, paragraph 1 (d) negotiations will be conducted and managed access commenced within 12 hours of arrival at the final perimeter.

4. The inspected State Party shall make every reasonable effort to demonstrate to the inspection team that any object, building, structure, container or vehicle to which the inspection team has not had full access, is not being used for purposes related to the compliance concern raised in the inspection request.

5. The inspection team shall be guided by the principle of conducting the inspection in the least intrusive manner possible, consistent with the effective and timely accomplishment of its mission. Wherever possible, the inspection team shall begin with the least intrusive procedures it deems acceptable and proceed to more intrusive procedures only as it deems necessary.

6. In carrying out the inspection in accordance with the request, the inspection team shall use only those methods necessary to provide sufficient relevant facts to clarify doubts about compliance with the provisions of the Convention, and shall refrain from activities not relevant thereto. It shall collect and document such evidence as is related to the compliance with the Convention by the inspected State Party, but shall neither seek nor document information which is clearly not related thereto, unless the inspected State Party expressly requests it to do so. Any material collected and subsequently found not to be relevant shall not be retained.

B. Managed Access

1. In meeting the requirement to provide access within the requested perimeter, the inspected State Party shall be obliged to allow the greatest degree of access possible in accordance with its obligations to demonstrate compliance and in accordance with the parameters of the managed access provisions set out below.

2. The inspection team shall take into consideration suggested modifications of the inspection plan and proposals which may be made by the inspected State Party, at whatever stage of the inspection including the pre-inspection briefing, to ensure that sensitive equipment, information or areas not related to chemical weapons are protected.

3. The inspected State Party shall designate the perimeter entry/exit points. At the inspected State Party's request, the inspection team and the inspected State Party may negotiate: the extent of access to any particular place or places within the requested and final perimeters as provided in paragraph 4-6 below; the particular inspection activities to be conducted by the inspection team; the performance of particular activities by the inspected State Party; and the provision of particular information by the inspected State Party.

4. In conformity with the relevant provisions of the Confidentiality Annex the inspected State Party shall have the right to take measures to protect sensitive installations and prevent disclosure of confidential data not related to chemical weapons. Such measures, may include inter alia:

(a) Removal of sensitive papers from office spaces and securing them in safes;

(b) Shrouding of sensitive displays, stores and equipment that cannot be secured in safes;

(c) Shrouding of sensitive pieces of equipment, such as computer or electronic systems;

(d) Logging off of computer systems and turning off of data indicating devices;

(e) Restriction of sample analysis to presence or absence of chemicals on schedules 1, 2 and 3 or appropriate degradation products;

(f) Random selective access whereby the inspectors are requested to select a given percentage or number of buildings of their choice to inspect; the same principle can apply to the interior and content of sensitive buildings;

(g) In exceptional cases only, giving individual inspectors access to certain parts of the inspection site.

5. In the event the inspected State Party restricts or denies requested access to places, activities, or information, it is obliged by this Convention to make every reasonable effort to provide alternative means to satisfy the compliance concerns which generated the challenge inspection.

6. For facilities declared under Articles IV, V and VI the following shall apply:

(a) For facilities with facility agreements, access and activities within the final perimeter shall be unimpeded within the boundaries established by the agreements;

(b) For facilities without facility agreements, negotiation of access and activities shall be governed by the applicable general inspection guidelines established under the Convention;

(c) Access greater than that granted for inspections under Articles IV, V and VI shall be managed in accordance with procedures in paragraphs 3 and 4 of this section.

7. For facilities declared under Article III, paragraph 1 (d), if access is restricted or denied to areas or structures not related to chemical weapons, using procedures in paragraphs 3 and 4 in this section, the inspected State Party shall make every effort to satisfy the compliance concern.

C. Observer

1. The requesting State Party shall have the right to send a representative to observe the conduct of a challenge inspection. It shall liaise with the Secretariat to coordinate the arrival of its observer at the same point of entry as the inspection team. The observer's arrival time should be planned to coincide as closely as possible with the inspection team's arrival.

2. The observer of the requesting State Party shall have the right throughout the period of inspection to be in communication with the embassy of the requesting State located in the host State or, in the case of absence of an embassy, with the requesting State itself. The observer shall have the right to either use the communications provided by the requested State Party or that of the inspection team.

3. The observer shall have the right to make recommendations to the inspection team, which the team shall take into account only to the extent it deems appropriate. The observer shall generally have the access to the inspection site as granted by the inspected State Party to the inspection team. However, if there is a place into which the inspected State Party is willing to allow the inspection team or a team member to go, but into which it does not wish the observer to go, the observer shall remain outside. Throughout the inspection, the inspection team shall keep the observer informed about the conduct of the inspection and the findings.

4. Throughout the in-country period, the inspected State Party shall provide or arrange for the amenities necessary for the observer such as communication means, interpretation services, transportation, working space, lodging, meals and medical care. All the costs in connection with the stay of the observer on the territory of the inspected State Party or the host State shall be borne by the requesting State Party.

D. Extension of Inspection Site

If the inspection team considers it necessary, for the purpose of the inspection, to visit any other contiguous location outside the boundaries of the final perimeter, the inspection site may be extended by agreement between the inspection team and the inspected State Party. A request to visit an additional contiguous location shall not extend the overall period of inspection unless agreed in accordance with section E. below.

E. Duration of an Inspection

The period of inspection shall not exceed 96 hours. It may be extended by agreement with the inspected State Party.

IV. DEPARTURE

Upon completion of the post-inspection procedures at the inspection site, the inspection team and the observer of the requesting State Party shall then leave the territory of that State as soon as possible.

V. REPORTS

A. Contents

The inspection report shall summarize in a general way the activities conducted by the inspection team and the factual findings of the inspection team with regard to the ambiguities or suspected non-compliance cited in the request for the challenge inspection and in accordance with Article IX, paragraph 18. It shall also include an assessment by the inspection team of the degree and nature of access and cooperation granted to the inspectors and the extent to which this enabled them to fulfill their mandate. Detailed information relating to the concerns regarding compliance with the Convention cited in the request for the challenge inspection shall be submitted as an Appendix to the final report and be retained within the Secretariat under appropriate safeguards to protect sensitive information.

B. Procedures

The Inspectors shall within 72 hours of their return to their primary work location submit a preliminary inspection report to the Director-General of the Secretariat. The Director-General shall promptly transmit the preliminary report to the requesting State Party, the inspected State Party and the Executive Council. A draft final report shall be made available to the inspected State Party within 20 days of the completion of the inspection for identification of any information not related to chemical weapons it considers

should not, due to its confidentiality, be circulated outside the Secretariat. The Secretariat shall consider proposals for changes to their draft final report made by the inspected State Party and using its own discretion, wherever possible, adopt them. The final report shall be submitted within 30 days of the completion of the inspection and be circulated to States Parties.

VI. NUMBER AND DURATION OF INSPECTIONS

The following provisions shall apply to inspections conducted pursuant to this Part:

1. There shall be no limits on the number or frequency of on-site challenge inspections of facilities declared pursuant to Articles III, IV, V and VI that a State Party is obligated to receive, or shall have the right to propose.

2. The frequency of on-site challenge inspections of undeclared facilities or locations which a State Party is obligated to receive shall not exceed 12 in any 12 month period. No more than 3 such inspections shall be conducted at the same time within the territory or in any other place under the jurisdiction or control of a State Party. In addition, no undeclared facility or location shall receive more than 3 challenge inspections in any 12 month period.

PART IX: PROCEDURES IN CASES OF ALLEGED USE OF CHEMICAL WEAPONS

I. GENERAL

1. Investigations of alleged use of chemical weapons, initiated pursuant to Articles IX and/or X of the Convention, shall be conducted in accordance with this Verification Annex and detailed procedures to be established by the Director-General of the Secretariat.

2. The following additional provisions address specific procedures required in cases of alleged use of chemical weapons.

II. PRE-INSPECTION ACTIVITIES

A. Request for an investigation

The request for an investigation of an alleged use of chemical weapons to be submitted to the Director-General of the Secretariat, to the extent possible, should include the following information:

(a) The State Party on whose territory use of chemical weapons is alleged to have taken place;

(b) The point of entry or other suggested safe routes of access;

(c) Location and characteristics of the area(s) where chemical weapons are alleged to have been used;

(d) When chemical weapons are alleged to have been used;

(e) Types of chemical weapons believed to have been used;

(f) Extent of alleged use;

(g) Characteristics of the possible toxic chemicals;

(h) Effects on humans, animals and vegetation;

(i) Request for specific assistance, if applicable.

The requesting State Party may submit at any time any additional information it deems necessary.

B. Notification

1. The Director-General of the Secretariat shall immediately acknowledge receipt to the requesting State Party of its request and inform the Executive Council and all States Parties.

2. If applicable, the Director-General of the Secretariat shall notify the State Party on whose territory an investigation has been requested. The Director-General shall also notify other States Parties if access to their territories might be required during the investigation.

C. Assignment of inspection team

1. The Director-General shall prepare a list of qualified experts whose particular field of expertise could be required in an investigation of alleged use of chemical weapons and constantly keep this list updated. This list shall be communicated, in writing, to all States Parties within 30 days of the entry into force of the Convention and after each change to the list. Any qualified expert included in this list shall be regarded as designated unless a State Party, within 30 days after its receipt of the list declares its non-acceptance.

2. The Director-General shall select the leader and members of an inspection team from the full-time inspectors already designated for challenge inspections taking into account the circumstances and specific nature of a particular request. In addition, inspection team members may be selected from the list of qualified experts when, in the view of the Director-General, expertise not available among inspectors already designated is required for the proper conduct of a particular investigation.

3. When briefing the inspection team the Director-General shall include any additional information provided by the requesting State, or any other sources, to ensure that the inspection can be carried out in the most effective and expedient manner.

D. Dispatch of inspection team

1. Immediately upon the receipt of a request for an investigation of alleged use of chemical weapons the Director-General shall, through contacts with the relevant States Parties, request and confirm arrangements for the safe reception of the team.

2. The Director-General shall dispatch the team at the earliest opportunity, taking into account the safety of the team.

3. If the team has not been dispatched within 24 hours from the receipt of the request, the Director-General shall inform the Executive Council and the States Parties concerned about the reasons for the delay.

E. Briefings

1. The inspection team shall have the right to be briefed by representatives of the inspected State Party upon arrival and at any time during the inspection.

2. Before the commencement of the inspection the inspection team shall prepare an inspection plan to serve, inter alia, as a basis for logistic and safety arrangements. The inspection plan shall be updated as the need arises.

III. CONDUCT OF INSPECTIONS

A. Access

The inspection team shall have the right of access to any and all areas which could be affected by the alleged use of chemical weapons. It shall also have the right of access to hospitals, refugee camps and other locations it deems relevant to the effective investigation of the alleged use of chemical weapons. For such access, the inspection team shall consult with the inspected State Party.

B. Sampling

1. The inspection team shall have the right to collect samples, of types and in quantities it considers necessary. If the inspection team deems it necessary, and if so requested by it, the inspected State Party shall assist in the collection of samples under the supervision of inspector(s) or inspection assistant(s). The inspected State Party shall also permit and cooperate in the collection of appropriate control samples from areas neighbouring the site of the alleged use and from other areas as requested by the inspection team.

2. Samples of importance in the investigation of alleged use include toxic chemicals, munitions and devices, remnants of munitions and devices, environmental samples (air, soil, vegetation, water, snow, etc.) and biomedical samples from human or animal sources (blood, urine, excreta, tissue etc.).

3. When duplicate samples cannot be taken and the analysis is performed at off-site laboratories, any remaining sample shall, if so requested, be returned to the State Party after the completion of the analysis.

C. Extension of the inspection site

When the inspection team during an inspection deems it necessary to extend the investigation into a neighbouring State Party the Director-General of the Secretariat shall notify that State Party about the need for access to its territory and request and confirm arrangements for the safe reception of the team.

D. Extension of inspection duration

If the inspection team deems that safe access to a specific area relevant to the investigation is not possible, the requesting State Party shall be informed immediately. If necessary, the period of inspection shall be extended until safe access can be provided and the inspection team will have concluded its mission.

E. Interviews

The inspection team shall have the right to interview and examine persons who may have been affected by the alleged use of chemical weapons. It shall also have the right to interview eyewitnesses of the alleged use of chemical

weapons and medical personnel and/or other persons who have treated or have come into contact with persons who may have been affected by the alleged use of chemical weapons. The inspection team shall have access to medical histories, if available, and be permitted to participate in autopsies as appropriate of the persons who may have been affected by the alleged use of chemical weapons.

IV. REPORTS

A. Procedures

1. The inspection team shall within 24 hours from its arrival in the inspected State Party send a situation report to the Director-General of the Secretariat. It shall further throughout the investigation send progress reports as necessary.

2. The inspectors shall within 72 hours of their return to their primary work location submit an interim report to the Director-General of the Secretariat. The Director-General shall promptly transmit the report to the Executive Council and all States Parties. The final report shall be submitted to the Director-General of the Secretariat within 30 days of their return to their primary work location.

B. Contents

1. The situation report shall indicate any urgent need for assistance and any other relevant information. The progress reports shall indicate any further need for assistance that might be identified during the course of the investigation.

2. The final report shall summarize the factual findings of the inspection, particularly with regard to the alleged use cited in the request. In addition a report of an investigation of an alleged use shall include a description of the investigation process, tracing its various stages, with special reference to (i) the locations and time of sampling and in situ analyses; and (ii) supporting evidence, such as the records of interviews, the results of medical examinations and scientific analyses, and the documents examined by the inspection team.

3. If the inspection team collects any information in the course of its investigation that might serve to identify the origin of any chemical weapons used, inter alia, through identification of any impurities or other substances during laboratory analysis of samples taken, that information shall be included in the report.

V. STATES NOT PARTY

In the case of alleged use of chemical weapons involving a non-State Party or on territory not controlled by a State Party, the Organization shall closely cooperate with the Secretary-General of the United Nations. If so requested, the Organization shall put its resources at the disposal of the Secretary-General of the United Nations.

PART X

Parts I, II, III, IV, V, VI, VII and IX of this Verification Annex shall be subject to modification in accordance with the procedures in paragraph 5 of Article XV.

ANNEX 2: ANNEX ON CHEMICALS

ANNEX 2: ANNEX ON CHEMICALS

Contents

I. GUIDELINES FOR SCHEDULES OF CHEMICALS

A. Guidelines for Schedule 1

The following criteria shall be taken into account in considering whether a chemical should be included on Schedule 1:

1. (a) It has been developed, produced, stockpiled or used as a Chemical Weapon as defined in Article I;

or

(b) It poses otherwise a high risk to the objectives of the Convention by virtue of its high potential for use for activities prohibited under the Convention because one or more of the following conditions is met:

(a) It possesses a chemical structure closely related to that of other toxic chemicals listed on Schedule 1 and has, or can be expected to have, comparable properties;

(b) It possesses such lethal or incapacitating toxicity as well as other properties that might enable it to be weaponized and used as a chemical weapon;

(c) It may be used as a precursor in the final single technological stage of production of a toxic chemical listed on Schedule 1, regardless of whether this stage takes place in facilities, in munitions or elsewhere;

and

2. It has little or no use for purposes not prohibited under the Convention.

B. Guidelines for Schedule 2 Part A

The following criteria shall be taken into account in considering whether a precursor to a Schedule 1 or Schedule 2B chemical should be included in Schedule 2 Part A:

1. It may be used in one of the chemical reactions at the final stage of formation of a chemical listed on Schedule 1 or Schedule 2 Part B.

2. It may pose a significant risk to the objectives of the Convention by virtue of its importance in the production of a chemical listed on Schedule 1 or Schedule 2 Part B.

3. It is produced in quantities consistent with the aim of fulfilling the verification measures stipulated in Article VI.

C. Guidelines for Schedule 2 Part B

The following criterion shall be taken into account in considering whether a toxic chemical which is not included in Schedule 1 should be included on Schedule 2 Part B:

it poses a significant risk to the objectives of the Convention because it possesses such lethal or incapacitating toxicity as well as other properties that might enable it to be weaponized and used as a chemical weapon.

D. Guidelines for Schedule 3

The following criteria shall be taken into account when considering whether a dual purpose chemical or a precursor chemical, not listed in other schedules, should be included on Schedule 3:

Toxic chemical:

1. It has been stockpiled as a chemical weapon;

or

2. It may pose a risk to the objectives of the Convention because it possesses such lethal or incapacitating toxicity as well as other properties that might enable it to be weaponized and used as a chemical weapon;

and

3. It may be produced in large commercial quantities for purposes not prohibited under the Convention.

Precursor:

1. It may pose a risk to the objectives of the Convention by virtue of its importance in the production of one or more chemicals listed on Schedule 1 or Schedule 2;

and

2. It may be produced in large commercial quantities for purposes not prohibited under the Convention.

II. MODALITIES FOR REVISION OF SCHEDULES AND GUIDELINES

A. General provisions

1. The revisions envisaged consist of additions to, deletions from, or shifts between the Schedules and modifications of, additions to or deletions from the guidelines.

2. If the Director-General of the Secretariat has any information which, in the opinion of the Director-General, may require a revision of the Schedules or one or more of the guidelines. That information shall be communicated to all States Parties and the Executive Council.

3. Proposals for revision of Schedules and guidelines shall be made by States Parties in accordance with paragraphs 1 and 5 (a) of Article XIV.

B. Decisions regarding revisions of Schedules

4. When a proposal is made regarding a deletion of a chemical from a Schedule or a shift between Schedules, the regime for that chemical shall be maintained while a decision on the proposed deletion or shift is being reached.

5. When an addition to a Schedule of chemicals is proposed no regime shall be applied to that chemical until a decision has been taken to include it on one of the Schedules.

6. The decision on a proposed revision of the Schedules shall be taken in accordance with the modification procedure set out in paragraph 5 of Article XIV.

C. Decisions regarding revision of guidelines

7. When a proposal has been made for a revision of one or more of the guidelines, the Director-General shall undertake a review of the Schedules affected by such a revision and communicate the results to all States Parties and the Executive Council at least 30 days before the proposal is examined by the Executive Council.

8. The decision on a proposed revision of the guidelines shall be taken in accordance with the modification procedure set out in paragraph 5 of Article XIV.

III. SCHEDULES OF CHEMICALS (CAS number)

A. Schedule 1

1. O-Alkyl ($\leq C_{10}$, incl. cycloalkyl) alkyl (Me, Et, n-Pr or i-Pr)-phosphonofluoridates

e.g. Sarin: O-isopropyl methylphosphonofluoridate (107-44-8)
Soman: O-pinacolyl methylphosphonofluoridate (96-64-0)

2. O-Alkyl ($\leq C_{10}$, incl. cycloalkyl) N,N-dialkyl (Me, Et, n-Pr or i-Pr) phosphoramidocyanidates

e.g. Tabun: O-ethyl N,N-dimethylphosphoramidocyanidate (77-81-6)

3. O-Alkyl (H or $\leq C_{10}$, incl. cycloalkyl) S-2-dialkyl (Me, Et, n-Pr or i-Pr)-aminoethyl alkyl (Me, Et, n-Pr or i-Pr) phosphonothiolates and corresponding alkylated and protonated salts

e.g. VX: O-ethyl S-2-diisopropylaminoethyl methyl phosphonothiolate (50782-69-9)

4. Sulphur mustards:

2-Chloroethylchloromethylsulphide (2625-76-5)
bis(2-chloroethyl)sulphide: Mustard gas (H) (505-60-2)
bis(2-chloroethylthio)methane (63869-13-6)
1,2-bis(2-chloroethylthio)ethane: Sesquimustard (Q) (3563-36-8)
1,3-bis(2-chloroethylthio)-n-propane (63905-10-2)
1,4-bis(2-chloroethylthio)-n-butane
1,5-bis(2-chloroethylthio)-n-pentane
bis(2-chloroethylthiomethyl)ether
bis(2-chloroethylthioethyl)ether: O-Mustard (T) (63918-89-8)

5. Lewisites:

Lewisite 1: 2-chlorovinyldichloroarsine (541-25-3)
Lewisite 2: bis(2-chlorovinyl)chloroarsine (40334-69-8)
Lewisite 3: tris(2-chlorovinyl)arsine (40334-70-1)

6. Nitrogen mustards:

HN1: bis(2-chloroethyl)ethylamine (538-07-8)
HN2: bis(2-chloroethyl)methylamine (51-75-2)
HN3: tris(2-chloroethyl)amine (555-77-1)

7. Saxitoxin (35523-89-8)

8. Ricin

9. Alkyl (Me, Et, n-Pr or i-Pr) phosphonyldifluoride
e.g. DF: methylphosphonyldifluoride (676-99-3)

10. O-Alkyl (H or $\leq C_{10}$, incl. cycloalkyl) O-2-dialkyl (Me, Et, n-Pr or i-Pr)-aminoethyl alkyl (Me, Et, N-Pr or i-Pr) phosphonites and corresponding alkylated and protonated salts

e.g. QL: O-ethyl O-2-diisopropylaminoethyl methylphosphonite (57856-11-8)

11. Chloro Sarin: O-isopropyl methylphosphonochloridate (1445-76-7)

12. Chloro Soman: O-pinacolyl methylphosphonochloridate (7040-57-5)

B. Schedule 2 Part A

1. Chemicals, except for those listed in Schedule 1, containing a phosphorus atom to which is bonded one methyl, ethyl or propyl (normal or iso) group but not further carbon atoms.

e.g. Methylphosphonyl dichloride (676-97-1)
Dimethyl methylphosphonate (765-79-6)

Exemption:

Fonofos: O-ethyl S-phenyl ethylphosphonodithioate (944-22-9)

2. N,N-Dialkyl (Me, Et, n-Pr or i-Pr) phosphoramidic dihalides

3. Dialkyl (Me, Et, n-Pr or i-Pr) N,N-dialkyl (Me, Et, n-Pr or i-Pr)-phosphoramidates

4. Arsenic trichloride (7784-34-1)

5. 2,2-Diphenyl-2-hydroxyacetic acid (76-93-7)

6. Quinuclidin-3-ol (1619-34-7)

7. N,N-Dialkyl (Me, Et, n-Pr or i-Pr) aninoethyl-2-chlorides and corresponding protonated salts

8. N,N-Dialkyl (Me, Et, n-Pr or i-Pr) aminoethane-2-ols and corresponding protonated salts

Exemptions:

N,N-dimethylamino ethanol and coresponding protonated salts (108-01-0)

	N,N-diethylamino ethanol and corresponding protonated salts	(100-37-8)
9.	N,N-Dialkyl (Me, Et, n-Pr or i-Pr) aminoethane-2-thiols and corresponding protonated salts	
10.	Bis (2-hydroxyethyl)sulphide (thiodiglycol)	(111-48-8)
11.	3,3-Dimethylbutan-2-ol (pinacolyl alcohol)	(464-07-3)
C.	Schedule 2 Part B	
1.	Amiton: O,O-Diethyl S-(2-(diethylamino)ethyl) phosphorothiolate and corresponding alkylated and protonated salts	(78-53-5)
2.	PFIB: 1,1,3,3,3 - pentafluoro -2- (trifluoromethyl) -1- propene	(382-21-8)
3.	3-Quinuclidinyl benzilate (BZ)	(6581-06-2)
D.	Schedule 3	
1.	Phosgene	(75-44-5)
2.	Cyanogen chloride	(506-77-4)
3.	Hydrogen cyanide	(74-90-8)
4.	Trichloronitromethane (chloropicrin)	(76-06-2)
5.	Phosphorus oxychloride	(10025-87-3)
6.	Phosphorus trichloride	(7719-12-2)
7.	Phosphorus pentachloride	(10026-13-8)
8.	Trimethyl phosphite	(121-45-9)
9.	Triethyl phosphite	(122-52-1)
10.	Dimethyl phosphite	(868-85-9)
11.	Diethyl phosphite	(762-04-9)
12.	Sulphur monochloride	(10025-67-9)
13.	Sulphur dichloride	(10545-99-0)
14.	Thionyl chloride	(7719-09-7)

15.	Triethanolamine	(102-71-6)
16.	Ethyldiethanolamine	
17.	Methyldiethanolamine	
18.	Fonofos	(944-22-9)
19.	N,N-dimethylamino ethanol and corresponding protonated salts	(108-01-0)
20.	N,N-diethylamino ethanol and corresponding protonated salts	(100-37-8)

IV. MODIFICATIONS

The contents of the Annex on Chemicals shall be subject to modification in accordance with the procedures in paragraph 5 of Article XV.

ANNEX 3: CONFIDENTIALITY ANNEX

ANNEX 3: CONFIDENTIALITY ANNEX

Contents

CONFIDENTIALITY ANNEX

A. General Principles for the Handling of Confidential Information

1. The obligation to protect confidential information shall pertain to the verification of both civil and military activities and facilities. Pursuant to the general obligation set out in Article VIII, the Organization shall:

(a) Require only the minimum amount of information and data necessary for the timely and efficient carrying out of its responsibilities under the Convention;

(b) Take measures necessary to ensure that inspectors and other staff members of the Secretariat meet the highest standards of efficiency, competence, and integrity;

(c) Develop agreements and regulations to implement the provisions of the Convention and shall specify as precisely as possible the information to which the Organization shall be given access by a State party.

2. The Director-General of the Secretariat shall have the primary responsibility for ensuring the protection of confidential information. The Director-General shall establish a stringent regime governing the handling of confidential information by the Secretariat, and in doing so, shall observe the following guidelines:

(a) Information shall be considered confidential if:

(i) It is so designated by the State party from which the information was obtained and to which the information refers; or

(ii) In the judgement of the Director-General, its unauthorised disclosure could reasonably be expected to cause damage to the State party to which it refers or to the mechanisms for implementation of the Convention;

(b) All data and documents obtained by the Secretariat shall be evaluated by the appropriate unit of the Secretariat in order to establish whether they contain confidential information. Data required by States parties to be assured of the continued compliance with the Convention by other States parties shall be routinely provided to them. Such data shall encompass:

(i) The initial and annual reports and declarations provided by States parties under Articles III, IV, V and VI;

(ii) General reports on the results and effectiveness of verification activities; and

(iii) Information to be supplied to all States parties in accordance with the provisions of the Convention;

(c) No information obtained by the Organization in connection with implementation of the Convention shall be published or otherwise released, except, as follows:

(i) General information on the implementation of the Convention may be compiled and released publicly in accordance with the decisions of the Conference of the States parties or the Executive Council;

(ii) Any information may be released with the express consent of the State party to which the information refers;

(iii) Information classified as confidential shall be released by the Organization only through agreed procedures which ensure that the release of information only occurs in strict conformity with the needs of the Convention;

(d) The level of sensitivity of confidential data or documents shall be established, based on criteria to be applied uniformly in order to ensure their appropriate handling and protection. For this purpose, a classification system shall be introduced, which by taking account of relevant work undertaken in the preparation of the Convention shall provide for clear criteria ensuring the inclusion of information into appropriate categories of confidentiality and the justified durability of the confidential nature of information. While providing for the necessary flexibility in its implementation the classification system shall protect the rights of States parties providing confidential information. Work on the classification system may commence in the Preparatory Commission;

(e) Confidential information shall be stored securely at the premises of the Organization. Some data or documents may also be stored with the National Authority of a State party. Sensitive information, inter alia, photographs, plans and other documents required only for the inspection of a specific facility may be kept under lock and key at this facility in conformity with the facility agreement to be concluded on the basis of a relevant model;

(f) To the greatest extent consistent with the effective implementation of the verification provisions of the Convention, information shall be handled and stored by the Secretariat in a form that precludes direct identification of the facility to which it pertains;

(g) The amount of confidential information removed from a facility shall be kept to the minimum necessary for the timely and effective implementation of the verification provisions of the Convention;

(h) Access to confidential information shall be regulated in accordance with its classification. The dissemination of confidential information within the Organization shall be on a strictly need-to-know basis;

(i) The Director-General shall report annually to the Conference of the States parties on the implementation of this regime.

3. States parties shall treat information which they receive from the Organization in accordance with the level of confidentiality established for that information. Upon request, States parties shall provide details on the handling of information provided to them by the Organizations.

B. Employment and Conduct of Personnel in the Secretariat

1. Conditions of staff employment shall be such as to ensure that access to and handling of confidential information shall be in conformity with the procedures established by the Director-General in accordance with part A of this Annex.

2. Each position in the Secretariat shall be governed by a formal position description that specifies the scope of access to confidential information, if any, needed in that position.

3. The Director-General of the Secretariat, the inspectors and other members of the staff shall not disclose even after termination of their functions to any unauthorised persons any confidential information coming to their knowledge in the performance of their official duties. They shall not communicate to any State, organisation or person outside the Secretariat any information to which they have access in connection with their activities in relation to any State party.

4. In the discharge of their function inspectors shall only request the information and data which are necessary to fulfil their mandate. They shall not make any records of information collected incidentally and not related to verification of compliance with the Convention.

5. The staff shall enter into individual secrecy agreements with the Secretariat covering their period of employment and a period of five years after it is terminated.

6. In order to avoid improper disclosures, inspectors and staff members shall be appropriately advised and reminded about security considerations and of the possible penalties that they would incur.

7. Not less than 30 days before an employee is given clearance for access to confidential information that refers to activities within the territory, or in any place under the jurisdiction or control, of a State party, the State party concerned shall be notified of the proposed clearance. For inspectors the notification of a proposed designation shall fulfil this requirement.

8. In evaluating the performance of inspectors and any other employees of the Secretariat, specific attention shall be given to the employee's record regarding protection of confidential information.

C. Measures to Protect Sensitive Installations and Prevent Disclosure of Confidential Data in the Course of On-Site Verification Activities

1. States parties shall have the right to take such measures as they deem necessary to protect confidentiality, and shall have the right and the obligation to make every reasonable effort to demonstrate compliance with the

provisions of this Convention. Receiving an inspection they may indicate to the inspection team the equipment, documentation or areas that they consider sensitive and not related to the purpose of the inspection.

2. Teams shall be guided by the principle of conducting on-site inspections in the least intrusive manner possible, consistent with the effective and timely accomplishment of their mission. They shall consider proposals which may be made by the State party receiving the inspection, at whatever stage of the inspection, to ensure that sensitive equipment or information, not related to chemical weapons, is protected.

3. Inspection teams shall strictly abide by the provisions set out in the relevant Articles and Annexes of this Convention governing the conduct of inspections. They shall fully respect the procedures designed to protect sensitive installations and to prevent the disclosure of confidential data.

4. In the elaboration of subsidiary arrangements/facility attachments due regard shall be paid to the requirement of protecting confidential information. Agreements on inspection procedures for individual facilities shall also include specific and detailed arrangements with regard to the determination of those areas of the facility to which inspectors are granted access, the storage of confidential information on-site, the scope of the inspection effort in agreed areas, the taking of samples and their analysis, the access to records and the use of instruments and continuous monitoring equipment.

5. The report to be prepared after each inspection shall only contain facts relevant to compliance with the Convention. The report shall be handled in accordance with the regulations established by the Organization governing the handling of confidential information. If necessary, the information contained in the report shall be processed into less sensitive forms before it is transmitted outside the Secretariat and the inspected State party.

D. Procedures in Case of Breaches or Alleged Breaches of Confidentiality

1. The Director-General of the Secretariat shall establish necessary procedures to be followed in case of breaches or alleged breaches of confidentiality, taking into account recommendations made by the Preparatory Commission.

2. The Director-General of the Secretariat shall oversee the implementation of individual secrecy agreements and promptly initiate an investigation if there is any indication that obligations concerning the protection of confidential information have been violated and if the Director-General considers such an indication sufficient. The Director-General shall also promptly initiate an investigation if an allegation concerning a breach of confidentiality is made by a State party.

3. The Director-General of the Secretariat shall impose appropriate punitive and disciplinary measures on staff members who have violated their obligations to protect confidential information. In case of serious breaches the immunity from legal process may be waived by the Director-General.

4. States parties shall, to the extent possible, cooperate and support the Director-General of the Secretariat in investigating any breach or alleged breach of confidentiality and in taking appropriate action in case a breach has been established.

5. The Organization shall not be held liable for any breach of confidentiality committed by members of the Secretariat.

6. For breaches involving both a State party and the Organization a "Commission for the settlement of disputes related to confidentiality", set up as a subsidiary ad hoc body of the Conference of the States parties, shall consider the case. This Commission shall be appointed by the Conference of the States parties. Rules governing its composition and operating procedures shall be adopted by the Conference of the States parties at its first session.

E. Amendments and Modifications

Part A of this Confidentiality Annex shall be subject to amendment in accordance with the procedures in paragraphs 2 and 3 of Article XIV. Parts B, C and D of this Confidentiality Annex shall be subject to modification in accordance with the procedures in paragraph 5 of Article XV.

ANNEX 4: ANNEX ON THE PREPARATORY COMMISSION

ANNEX ON THE PREPARATORY COMMISSION

1. For the purpose of carrying out the necessary preparations for the effective operation of the provisions of the Convention and for preparing for the first session of the Conference of the States parties, the Secretary-General of the United Nations shall convene a Preparatory Commission not later than 30 days after the Convention has been signed by 50 States.

2. The Commission shall be composed of all States which sign the Convention before its entry into force. Each signatory State shall have one representative in the Preparatory Commission, who may be accompanied by alternates and advisers.

3. The Commission shall be convened at the seat of the Organization and remain in existence until the first session of the Conference of the States parties has convened.

4. The expenses of the Commission, as well as of the provisional Secretariat, shall be met by the States signatories to the Convention, participating in the Commission, in accordance with the United Nations scale of assessment, adjusted to take into account differences between the United Nations membership and the participation of States signatories in the Commission. States which accede to the Convention will share the expenses of the preparatory activity through an appropriate mechanism of reimbursement. The Commission and the provisional Secretariat may also benefit from voluntary contributions.

5. All decisions of the Commission should be taken by consensus. If, notwithstanding the efforts of representatives to achieve consensus, an issue comes up for voting, the Chairman of the Commission shall defer the vote for 24 hours and during this period of deferment shall make every effort to facilitate achievement of consensus, and shall report to the Commission prior to the end of the period. If consensus is not possible at the end of 24 hours, the Commission shall take decisions on questions of procedure by a simple majority of the members present and voting. Decisions on questions of substance shall be taken by two-thirds majority of the members present and voting. When the issue arises as to whether the question is one of substance or not, that question shall be treated as one of substance unless otherwise decided by the Commission by the majority required for decisions on questions of substance.

6. The Commission shall:

(a) Elect its Chairman and other officers, adopt its rules of procedure, determine its place of meeting, meet as often as necessary and establish such committees as it deems useful;

(b) Appoint its Executive Secretary;

(c) Establish a provisional Secretariat to assist the Commission in its activity and to exercise such functions as the Commission may determine, appoint the necessary staff in charge of preparatory work concerning the main

activities to be carried out by the Secretariat to be established by the Convention. Only nationals of signatory States can be appointed to the provisional Secretariat;

(d) Develop draft rules on procedures and guidelines as specified in the Convention and its Annexes for subsequent endorsement as a matter of substance by the Conference of the States parties in accordance with paragraph 16 of Article VIII;

(e) Make arrangements for the first session of the Conference of the States parties, including the preparation of a draft agenda and draft rules of procedure;

(f) Undertake, inter alia, the following tasks on subjects requiring immediate attention after the entry into force of the Convention:

(i) The detailed staffing pattern of the Secretariat, including decision-making flow charts;

(ii) Assessments of personnel requirements;

(iii) Staff rules for recruitment and service conditions;

(iv) Recruitment and training of technical personnel;

(v) Standardization and purchase of equipment;

(vi) Organization of office and administrative services;

(vii) Recruitment and training of support staff;

(viii) Review the scale of financial contribution for the Organization;

(ix) Establishment of administrative and financial regulations;

(x) Preparation of the agreement required pursuant to paragraph 3 of Article XIII;

(xi) Preparation of host country agreement;

(xii) Preparation of the draft Model Agreements and facility agreements;

(xiii) Preparation of guidelines for initial inspections;

(xiv) Preparation of the inspection manual;

(xv) Preparation of programme of work and budget of the first year of activities of the Organization;

(xvi) Preparation of such studies, reports and recommendations as it deems necessary.

7. The Commission shall prepare a final report on all matters within its mandate for the first session of the Conference of the States parties and the first meeting of the Executive Council. It shall make recommendations to the Conference of the States parties, including on the transfer of functions, property and records from the provisional Secretariat to the Secretariat.

8. At the first session of the Conference of the States parties, the property and records of the Commission shall be transferred to the Organization.

ANNEX 5: ANNEX ON THE COMPOSITION OF THE EXECUTIVE COUNCIL

ANNEX 5

ANNEX ON THE COMPOSITION OF THE EXECUTIVE COUNCIL

1. The Executive Council shall, as specified in Article VIII of the Convention, consist of 30 States parties which shall comprise the following:

(a) The six States parties, to be elected by the Conference of the States parties which, having the most significant national chemical industry, will be especially involved in the implementation of the Convention; and

(b) Twenty-four States parties, to be elected by the Conference of the States parties, providing a regional representation as follows:

(i) Four from the Americas (North, Central, and South America);

(ii) Five from Europe;

(iii) Five from the Middle East and South Asia;

(iv) Five from Africa;

(v) Five from North and East Asia and the Pacific.

It is understood that, within each region, one member shall be the State party with the most significant chemical industry, (which by virtue of this will be especially involved in the Convention's implementation), that has not been selected in accordance with subparagraph (a).

2. For the first year of the Executive Council's operation, the six States parties under subparagraph 1 (a), as well as the five regional States parties under subparagraph 1 (b) which have the most significant national chemical industries, will be determined by the Preparatory Commission. The remaining 19 regional States parties shall be elected by the Conference of the States parties.

3. After the first year of the Executive Council's operation, the members of the Council shall review the membership of the 11 members serving by virtue of their status as States with the most significant chemical industries in the light of changes in the international distribution of chemical industries. Subsequent reviews by the Executive Council of these positions will be conducted every two years.

4. In the first year after entry into force of the Convention, the 11 members chosen by virtue of their status as States with the most significant chemical industries will serve a one-year term and the remaining 19 regional members shall serve a two-year term. Thereafter, all members of the Executive Council shall serve a two-year term.

5. The Executive Council shall elect its Chairman in accordance with rules of procedure to be developed by the Preparatory Commission and subsequently endorsed by the Conference of the States parties at its first session.

CONFERENCE ON DISARMAMENT

CD/1144
13 March 1992

Original: ENGLISH

REPORT ON THE GROUP OF SCIENTIFIC EXPERTS'
SECOND TECHNICAL TEST (GSETT-2)

Sixth report to the Conference on Disarmament of the Ad Hoc Group of Scientific Experts to Consider International Cooperative Measures to Detect and Identify Seismic Events

GE.92-60760/4336B

EXECUTIVE SUMMARY

The present report is the sixth report overall of the Ad Hoc Group of Scientific Experts to Consider International Cooperative Measures to Detect and Identify Seismic Events.

The report presents the results and experiences from the Ad Hoc Group of Scientific Experts' Second Technical Test (GSETT-2). The purpose of GSETT-2 was to test initial design concepts for a modern global system for international seismic data exchange as described by the Group in its fifth report (CD/903 and Corr.1).

The report focuses on the technical and factual aspects of GSETT-2. As was stated in the Group's fifth report, the development of technical concepts for the global system needs to be a purposeful and ongoing dynamic process. It was further stated that it is necessary to test the proposed concepts in practical experiments and adjust the system design in the light of this experience. GSETT-2 was extremely important in this regard. On the basis of the results compiled in this report, the Group envisages evaluating the seismological results of GSETT-2. In a forthcoming report, the Group will assess the implications of the test for the design of the envisaged global system.

The principal purpose of GSETT-2 was to test methods and procedures developed by the Group to expeditiously extract and transmit both parameter and wave-form data from stations to the Experimental International Data Centres (EIDCs), to process them at the EIDCs and to transmit the results back to the National Data Centres (NDCs). The experiment could not have been successfully conducted without preparation of detailed instructions, acquisition of necessary equipment and adequate preparatory testing.

GSETT-2 was carried out in four phases. Phase 1, which started in August 1988, involved the establishment of experimental facilities and procedures that would form part of the system to be tested. Phase 2 began in January 1990, and comprised a number of short-term preparatory tests on the various system components. During the full-scale test (Phase 3), the entire experimental system was operated continuously for 49 consecutive days, from 22 April to 9 June 1991. Phase 4, the evaluation of the results, is still continuing.

Prior to the full-scale phase of the test, the Group stressed the essential need for broad global participation in the test so that data could be obtained from widely distributed stations. Significant technical cooperation took place among many countries in an attempt to address this problem. In all, 34 countries participated in the main phase of GSETT-2, providing seismic data from 60 seismograph stations located in all of the continents. However, the distribution of the locations was far from ideal, with few stations in South America and Africa.

Twelve stations participating in the test were arrays. The seismic array stations proved to be capable of not only providing high detection capabilities, but also supplying preliminary event locations useful in further analysis. The achievable capabilities for detecting and locating seismic events in various parts of the world are critically dependent on the availability of suitably located and sensitive stations. During GSETT-2, the observed capabilities varied considerably, being high in northern Europe and generally low in the southern hemisphere.

GSETT-2 was conducted under two ruling principles. Firstly, NDCs should report each detected signal; and secondly, EIDCs should form as many events as possible. Without further specification of detection thresholds and distance-dependent event-defining criteria, these principles inevitably led to a large number of unassociated phases and many spurious events, matters that are now being considered in the Group's ongoing evaluation.

During the test, the participating countries operated NDCs, some with assistance from other countries. Four EIDCs were operated, in Canberra, Moscow, Stockholm and Washington D.C. A variety of modern international communication links were used.

The seismic event analysis functioned on a seven-day cycle. Each of the four EIDCs produced separate seismic event lists which were updated daily as more data were analysed. On the seventh day one of the EIDCs, on a rotating schedule, compiled a merged Final Event Bulletin and distributed it to all participants.

The procedures and methods used for the extraction and exchange of data at the national facilities worked well. A fairly complex global communication network was established to transmit the voluminous data between the national centres and the international centres, and between the international centres. This communications network also worked well. The NDCs and EIDCs managed to cope with most of their demanding tasks, and demonstrated for the first time that it is possible to operate such centres based on the analysis of both parameter and wave-form data. However, a sustained, long-term test would require significant increases in resources and modifications to the procedures at both NDCs and EIDCs.

Due to considerable efforts by all participants, GSETT-2 has provided useful and valuable results. The experiment provided an opportunity to test procedures, methods and equipment for data recording, collection, compilation and analysis. The stage-by-stage approach of the three phases was essential for the successful conduct of the main test. The time period of 49 days covered by the main test was long enough to gain experience from a sustained operation.

This test was a large and in many ways unprecedented undertaking because of the complexity of the experimental system, especially the communications links used, and the expeditious nature of daily seismic event bulletin preparation and exchange. In reviewing the results of GSETT-2, the Group

notes that many of the components of the experimental global system functioned well, taking into account the size and complexity of this undertaking. The procedures and instructions were generally followed. Valuable experience was gained at both the national and the international data centres.

The Group also notes that a preliminary assessment of the results of GSETT-2 indicated some inadequacies in the instructions and procedures for the experiment. This will be the subject of further study during the evaluation phase.

GSETT-2 has provided the Group with a solid base of experience and firm technical foundation to proceed with the evaluation of the concepts proposed for the global system and to adjust the system design in the light of this experience.

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Chapter 1

INTRODUCTION

1.1 Background

The present report is the sixth report overall of the Ad Hoc Group of Scientific Experts to Consider International Co-operative Measures to Detect and Identify Seismic Events.

The report presents the results and experiences from the Ad Hoc Group of Scientific Experts' Second Technical Test (GSETT-2). The purpose of GSETT-2 was to test initial design concepts for a modern global system for international seismic data exchange as described by the Group in the fifth report (CD/903 and Corr.1).

The report focuses on the technical and factual aspects of GSETT-2. As was stated in the Group's fifth report, the development of technical concepts for the global system needs to be a purposeful and ongoing dynamic process. It was further stated that it is necessary to test the proposed concepts in practical experiments and adjust the system design in the light of this experience. GSETT-2 was extremely important in this regard. On the basis of the results compiled in this report, the Group envisages evaluating the seismological results of GSETT-2. In a forthcoming report, the Group will assess the implications of the test for the design of the envisaged global system.

The present consensus report on the results of GSETT-2 has five chapters, each dealing with different aspects of the experiment. Appendices containing detailed and technical material will be finalized at the Group's thirty-fourth session and documented in a conference room paper of the Group. These appendices are to be considered an integral part of the sixth report. 1/

1.2 Overview of GSETT-2

In 1987, the Ad Hoc Group of Scientific Experts agreed to conduct a large-scale international experiment on the exchange and analysis of seismic data. The experiment was named GSETT-2 (the Group of Scientific Experts' Second Technical Test). In its progress report to the Conference on Disarmament on the work of its twenty-third session (CD/745), the Group stated that:

> "The principal purpose of this experiment should be the testing of methods and procedures developed by the Ad Hoc Group to expeditiously extract and transmit the data from stations to Experimental International Data Centres (EIDCs), to process them at EIDCs and to transmit the results back to participants."

1/ The appendices will be issued in Chinese, English and Russian only. Copies will be available from the secretariat of the Conference on Disarmament.

The Group's fifth report describes the initial design concepts of a modern international seismic monitoring system. These technical concepts, which were to be tested during GSETT-2, are based on the expeditious exchange of parameter (Level I) and wave-form (Level II) data and the processing of such data at IDCs. The proposed system consists of four major elements:

(a) A global network of high-quality seismograph stations, including seismic arrays, each conforming to specified technical standards and operated according to internationally agreed rules;

(b) Government-authorized NDCs responsible for providing agreed seismic data from national stations to IDCs;

(c) IDCs to collect and analyse seismic parameter and wave-form data, to distribute the results of these analyses and to make the data readily available to all participants;

(d) Telecommunications channels for the expeditious exchange of data between NDCs and IDCs, as well as among IDCs.

In its progress reports to the Conference on Disarmament, the Ad Hoc Group has described the various stages in the planning and development of GSETT-2. In addition, two internal documents (conference room papers 167 and 190) contain comprehensive descriptions of the experimental facilities being developed and the procedural arrangements.

GSETT-2 comprised four distinct phases:

Phase 1: Establishing the facilities and procedures that would form parts of the experimental system to be tested.

Phase 1 started in August 1988 and continued to the beginning of Phase 3.

Phase 2: Limited short-time tests of the experimental system in preparation for full-scale testing.

Phase 2 started in January 1990 and ended in December 1990.

Phase 3 (The main phase of GSETT-2): Full-scale testing, for 49 consecutive days, of the entire experimental system.

Phase 3 was conducted from 22 April to 9 June 1991.

Phase 4: Evaluation of the results of GSETT-2.

Phase 4 started in June 1991, and is still ongoing.

The experiences during Phase 1 and Phase 2 of GSETT-2 and the associated preparatory tests were essential for the successful conduct of the full-scale test (Phase 3).

Thirty-four countries 2/ participated in the main phase of GSETT-2, providing seismic data from 60 stations distributed over all continents. During this time, the participating countries operated NDCs, some with assistance from other countries. Four EIDCs were operated, in Canberra, Moscow, Stockholm and Washington D.C. A variety of modern international communication links were used.

1.3 Organization and method of work of the Ad Hoc Group

The Ad Hoc Group is open to all member States of the Conference on Disarmament, as well as other States upon invitation by the CD. Altogether, scientific experts and representatives from 27 member States of the CD and 8 other States have participated in the sessions of the Ad Hoc Group under its current mandate, which dates back to 7 August 1979 (CD/46). The names of the participants during the Group's work toward this report are listed in the appendices.

Upon invitation by the Conference on Disarmament, representatives of the World Meteorological Organization (WMO) have attended the Ad Hoc Group's sessions, and their valuable advice and assistance with regard to transmission of seismic data on the WMO Global Telecommunications System (GTS) has been greatly appreciated by the Group.

Upon invitation by the Conference on Disarmament, a representative of the International Maritime Satellite Organization (INMARSAT) attended the thirty-second session of the Group (29 July to 9 August 1991) to discuss possibilities for the use of INMARSAT in the development of the communications aspect of a future global seismic data exchange system. The Ad Hoc Group highly appreciated the presentation and technical demonstration given by the representative of INMARSAT on its high-speed data communications possibilities.

Several countries hosted informal technical workshops and arranged technical demonstrations which many of the Group's participants were able to attend, and which contributed significantly to the success of GSETT-2.

Dr. Ola Dahlman of Sweden has served as Chairman of the Ad Hoc Group. Dr. Frode Ringdal of Norway has served as the Group's Scientific Secretary. Mr. Michael Cassandra, of the CD secretariat, has served as Committee Secretary for the Ad Hoc Group. Mr. Peter Basham of Canada was elected by the Group to serve as Coordinator of GSETT-2.

2/ Argentina, Australia, Austria, Belgium, Canada, Chile, China, Cook Islands, Czechoslovakia, Denmark, Egypt, Finland, France, Germany, India, Italy, Japan, Kenya, Netherlands, New Zealand, Norway, Pakistan, Peru, Poland, Romania, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States of America, Union of Soviet Socialist Republics, Yugoslavia, Zambia.

In the course of its work toward the present report, the Ad Hoc Group agreed to establish five study groups, open to all participants, in order to achieve an appropriate compilation, summarization and assessment of the experience acquired through national investigations and cooperative studies in areas relevant to its work. The study groups have each dealt with a specific issue, as follows:

Study group 1 - Seismograph stations and station network

Study group 2 - National Data Centres (NDCs)

Study group 3 - Experimental International Data Centres (EIDCs)

Study group 4 - Communications

Study group 5 - Seismological evaluation.

The study groups have been headed by convenors as listed in the appendices. The convenors contributed to the drafting of material for the present report in their respective areas. The draft material, together with over 200 informal working papers presented by the participants, was reviewed and analysed during meetings of the Ad Hoc Group.

Since the submission of its fifth report, the Ad Hoc Group has met in six sessions at Geneva (its twenty-eighth through thirty-third sessions). The Group has submitted a progress report to the CD after each of its sessions (CD/944, CD/981, CD/1032, CD/1065, CD/1097 and CD/1145 respectively).

Chapter 2

SEISMOGRAPH STATIONS AND STATION NETWORK

2.1 Introduction

One of the major components of the envisaged international seismic data exchange system tested in GSETT-2 was the seismograph stations. The basic requirements for such stations which would constitute a global network include:

Continuous acquisition of digital wave-form data, which describe seismic ground movement, and uninterrupted recording

Automated detection of seismic signals

Storage of all recorded wave-form data and extracted parameters

Instrument calibration and maintenance

Interactive data analysis.

The emphasis during GSETT-2 was on acquiring digital wave-form data and automated extraction of signals, as opposed to the experience in GSETT-1, where many of the stations were analog and only parameter data were collected. The Group had previously agreed on the need for the global system to have a network of homogeneous stations operating with agreed specifications. The Group has agreed to preliminary general technical specifications for modern prototype "CD stations" to meet this requirement.

The envisaged global system would be comprised of a mixture of three-component seismograph systems and arrays. Both types of stations were used during GSETT-2 under a variety of conditions, and this offered an opportunity to evaluate their contributions to the overall system.

A number of countries upgraded their national seismic facilities in order to participate in GSETT-2. These efforts included the development and installation of prototype "CD stations". GSETT-2 offered an opportunity to evaluate the performance of these new facilities.

2.2 Seismograph stations

There are two basic types of seismic stations which may be combined in an appropriate way to form a global network. One is a single-site seismograph system capable of extracting data in both the short-period and long-period bands, and the other is a seismic array station where seismometers are arranged in a particular geometric pattern and operated jointly, and where the data are analysed in an integrated manner.

As has already been reported, 34 countries took part in GSETT-2, giving a total of 60 stations distributed over all continents (see figure 2.1).

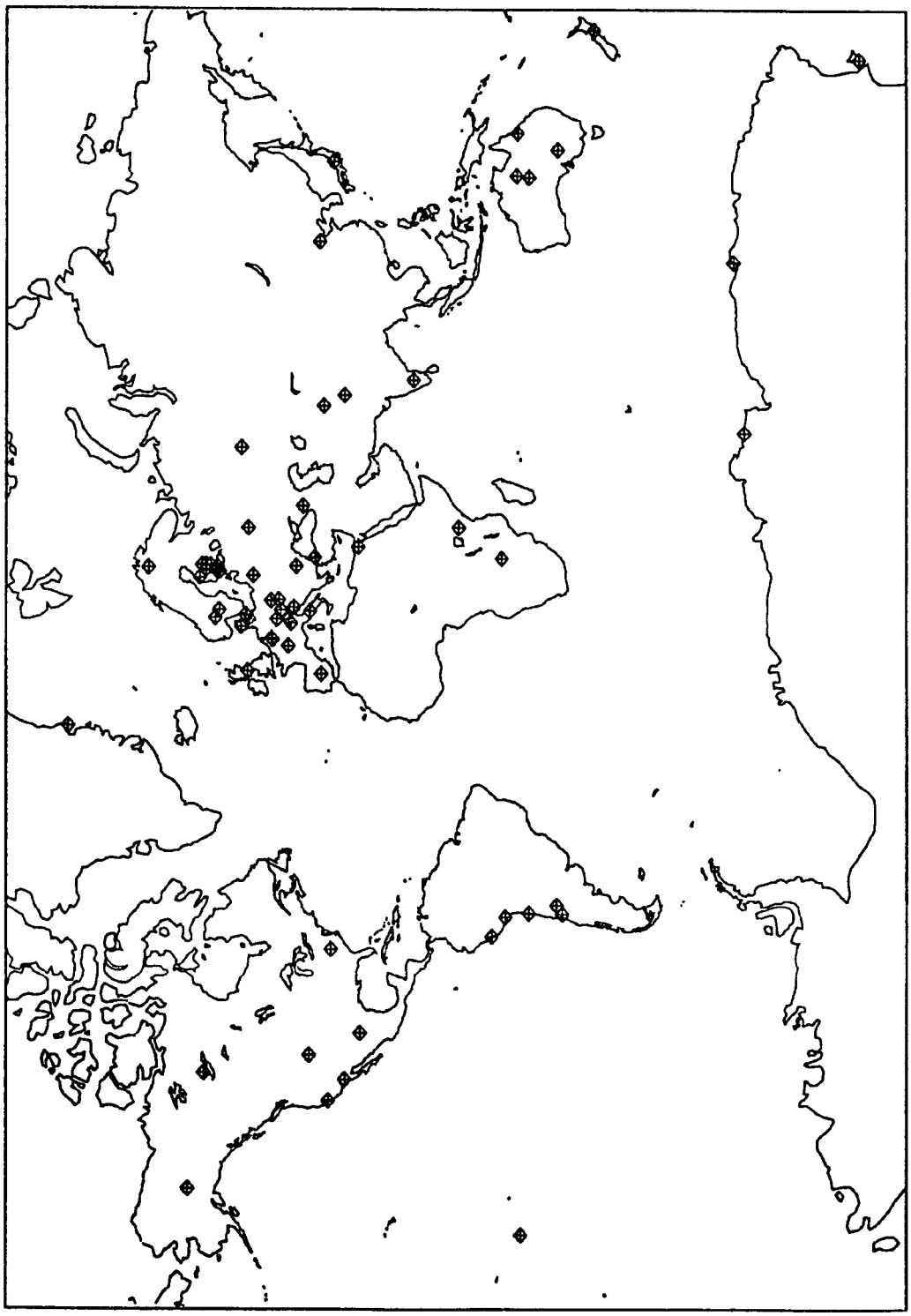


Figure 2.1. STATIONS PARTICIPATING IN THE MAIN PHASE OF GSETT-2, APRIL-JUNE 1991
Detailed descriptions of station characteristics can be found in the Group's Sourcebook for International Seismic Data Exchange, CRP/167.

The station network used in the course of GSETT-2 comprised both single-site systems and seismic arrays. Throughout this document, the general term "station" will refer to both types of installations. Each of the two basic types of seismograph station offers a number of advantages which make them useful in the global system.

The single-site station represents the basic observation point in the monitoring system envisaged by the Ad Hoc Group. During the main phase of GSETT-2, 48 of the 60 stations were of the single-site type. Twenty-seven of these were equipped with three-component seismograph systems. The remaining 21 stations had vertical component seismographs only.

Forty-one of the single-site stations used in GSETT-2 offered digital data recording. From digital three-component station recordings, all level I parameters can be extracted, including azimuth and velocity of the first-arriving P-wave. The latter two parameters can be used for rough epicentre location when the signal-to-noise ratio (SNR) is relatively high.

The seismic array is a seismological analogue of a composite radio antenna, both being used to optimize signal reception. A seismic array can also determine an approximate epicentre location. During the main phase of GSETT-2, 12 stations were of the array type.

The performance of an array depends on the number of seismometers used and the geometry of their deployment. In general, arrays are superior to single stations with respect to detection of weak seismic signals, and this is clearly seen in the statistics of event reporting from GSETT-2 given in the appendices. Figure 2.2 illustrates this point further. The 12 participating arrays reported an average of 3,000 phases each, whereas the 48 single stations averaged about 500 phases.

All but three of the stations used during GSETT-2 provided parameter reports for short-period seismic data. Long-period parameters were reported by 36 stations. A description of all participating stations is given in the appendices.

In appendix 3 to CD/903, the Ad Hoc Group outlined some preliminary specifications of a modern prototype "CD station". The concept of a "CD station" includes a list of functional and technical specifications for the standardized acquisition, processing and transmission of seismic data that must be met by stations of the global seismic monitoring system.

During GSETT-2, several countries tested various designs of "CD station", and the results were reported in national working papers. Different types of seismometers and digitizers, using different sampling rates, passbands, sensitivities, dynamic range and resolution were tested. Many different detectors and signal-processing techniques (also part of the CD station concept) were tested as well. As these functions were generally performed at the NDCs, the relevant experience is reported in chapter 3. Preliminary results suggest that all of these CD stations operated successfully during GSETT-2, keeping in mind that many systems were prototypes.

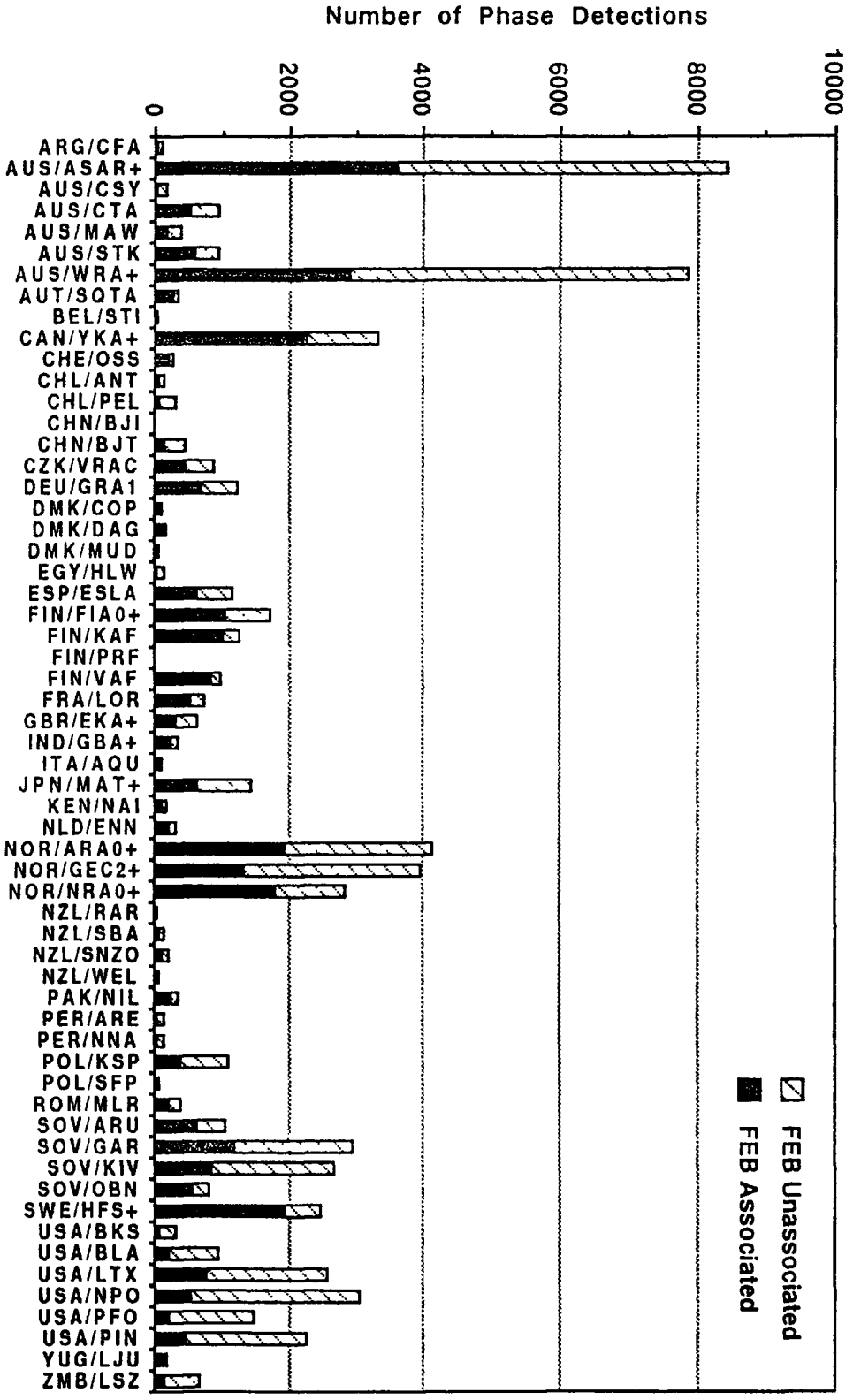


Figure 2.2. NUMBER OF ASSOCIATED AND UNASSOCIATED PHASES IN THE FINAL EVENT BULLTINS BY NDC AND STATION

Note: Array stations are marked with +

There has been some convergence of views on such matters as sampling rate and dynamic range, and thus it is now possible to provide more detailed recommendations for CD station parameters. Some parameters may change further as the technology advances. A table with recommended technical parameters is given in the appendices.

Within the GSE, a new concept of an "open station" was introduced before GSETT-2 took place. This concept means that there exists an option for any remote user to retrieve level I and level II data directly from the field station. During GSETT-2, eight open stations were operated. The usefulness of this concept was confirmed, although the direct retrieval option was not extensively used during GSETT-2.

Many different internal formats were used by the individual seismic stations and arrays participating in GSETT-2. The common GSE data exchange format (set out in conference room paper 190/Rev.4) was therefore essential in making their outputs compatible. The diversity of stations was, nevertheless, a complicating factor in the effort to interpret the data set.

2.3 Station network

Under the new concept of expeditious exchange and routine processing at IDCs of seismic wave-form data as tested in GSETT-2, system requirements with respect to the geographical distribution of seismograph stations remain essentially unchanged as compared to the system first described in the Ad Hoc Groups's first report (CCD/558), which was based on the regular exchange of level I (parameter) data.

Compared to the GSE's first technical test (GSETT-1, 1984), the total number of stations was slightly lower (GSETT-1 had 75 stations with 8 arrays and 67 single-site stations). Nevertheless, the global coverage remained quite similar. Again, the geographical distribution of stations was far from ideal, with a very dense coverage in parts of Europe and sparse coverage especially in Africa and South America. (In particular, Africa and South America had no arrays.) This is clearly seen from figure 2.1 and also from the table below:

Continents	Single-site stations	Arrays	Total stations
Africa	3	-	3
Antarctica	3	-	3
Asia	6	2	8
Australia and Oceania	5	2	7
Europe	20	7	27
North America	6	1	7
South America	5	-	5
Total	48	12	60

GSETT-2 confirmed the importance of deploying seismograph stations at sites with low background noise levels. Stations situated on islands and in coastal areas generally contributed far less than sensitive stations in the interior of continents, but they were important in some cases.

2.4 Conclusions

GSETT-2 confirmed the importance of array stations in detecting weak seismic events at all distances and in providing initial event location information. Modern three-component stations were also found to be valuable.

During GSETT-2, various designs of a standard "CD station" were successfully tested. The "open station" concept was also tested and was found useful.

It would be desirable that all stations have available continuous digital recording rather than only data segments from detected events.

The Ad Hoc Group has previously expressed the view that the global system should consist of at least 50 stations, to be located so as to provide adequate global coverage and to conform to specified technical standards. The station network in use during the full-scale test (48 single-site stations and 12 arrays from 34 countries) comprised stations on all continents. However, the distribution of stations was very uneven.

Furthermore, a number of the participating stations did not have modern equipment and thus did not meet the standards set for the global seismic monitoring system now under development. This places limitations and constraints on using GSETT-2 results for seismological evaluation of the effectiveness of the proposed system.

Chapter 3

NATIONAL DATA CENTRES

3.1 Introduction

NDCs were operated successfully by 34 countries, some with assistance from other countries. This chapter describes the results of the NDC operations and evaluates them in the context of the system concept (the Ad Hoc Group's fifth report (CD/903 and Corr.1)) and in the light of the instructions and procedures for GSETT-2 given in conference room paper 190/Rev.4.

3.2 NDC functions

The functions and procedures of the NDCs are based on the principle that parameter and wave-form data would be reported for all recorded seismic signals so that the probability of defining new events during the EIDC processing would be maximized.

The main functions of each NDC were to:

Collect data from stations;

Archive data for at least 15 days;

Detect seismic signals;

Extract parameter (level I) and wave-form (level II) data;

Form "NDC locations" for seismic events at local and regional distances;

Report (transmit) data to EIDCs;

Respond to requests for retransmission of data or for supplementary data;

Request data from other NDCs or EIDCs;

Receive seismic bulletins from EIDCs.

(a) Data collection and archiving

Continuous data were collected and archived by most participants in accordance with the instructions. This allowed rapid access in response to data requests. About two thirds of the stations archived data on-line (for time intervals varying from one day to permanently), allowing direct access to data in some cases. Twenty-three countries did their data processing and analysis at NDCs, although some performed these tasks at the station, as allowed for in the instructions.

(b) Signal detection

One objective of GSETT-2 was to develop and test the most effective means of automatic and interactive seismic signal processing (conference room paper 190/Rev.4, section 5.1). Twenty countries performed detection at the NDC rather than at stations. Nineteen countries operated automatic detectors, whereas only a few countries did so during GSETT-1 in 1984. Four main types of automatic detector were used: Murdoch-Hutt; STA/LTA amplitude trigger over one narrow frequency band; STA/LTA amplitude trigger over several frequency bands; and STA/LTA triggering using the binary logarithm of the amplitude. The most common of these systems was the narrow frequency band STA/LTA detector, with the majority of the participants using the single vertical channel for detection. Several participants did not use an automatic event detection system, relying on analysts to pick signal onsets. A few countries used a local/regional network in their detection process. Facilities using automatic signal detectors experienced a number of problems with false detections. Review of the results of the automatic detectors to screen out the false signals was a manual or computer-interactive process.

(c) Extraction of parameter (level I) data

The parameters to be reported routinely by NDCs are described in appendix C to conference room paper 190/Rev.4. NDCs reported more than 100,000 parameters from about 65,000 phase detections to the EIDCs. These data are displayed in figure 3.1.

Many countries incorporated semi-automatic analysis procedures, but no country found it feasible to introduce full automation. Analysis of array data often involved automatic extraction of parameters, but in all cases data were reviewed interactively. A few countries, generally those with analog facilities, extracted parameters manually. Many countries applied ad hoc criteria in handling very small local events and did not report such events.

About 25 per cent of the NDCs used the option of abbreviated reporting for large sequences of events. Approximately a third of the NDCs applied semi-automatic three-component processing procedures to extract polarization parameters (e.g., back azimuth to the source). Only 13 of the 34 NDCs reported any long-period Rayleigh wave data, an important parameter in seismic source identification.

One station reported T-phases on three occasions, all from announced underground nuclear explosions at 2,000 km distance. There was one other station within 6,000 km, and it did not detect the events, although there were several observations at greater distances.

The procedures for reporting were designed mostly for teleseisms and, consequently, caused some difficulties with the reporting of local and regional events. Recommended changes in this regard are included in the appendices.

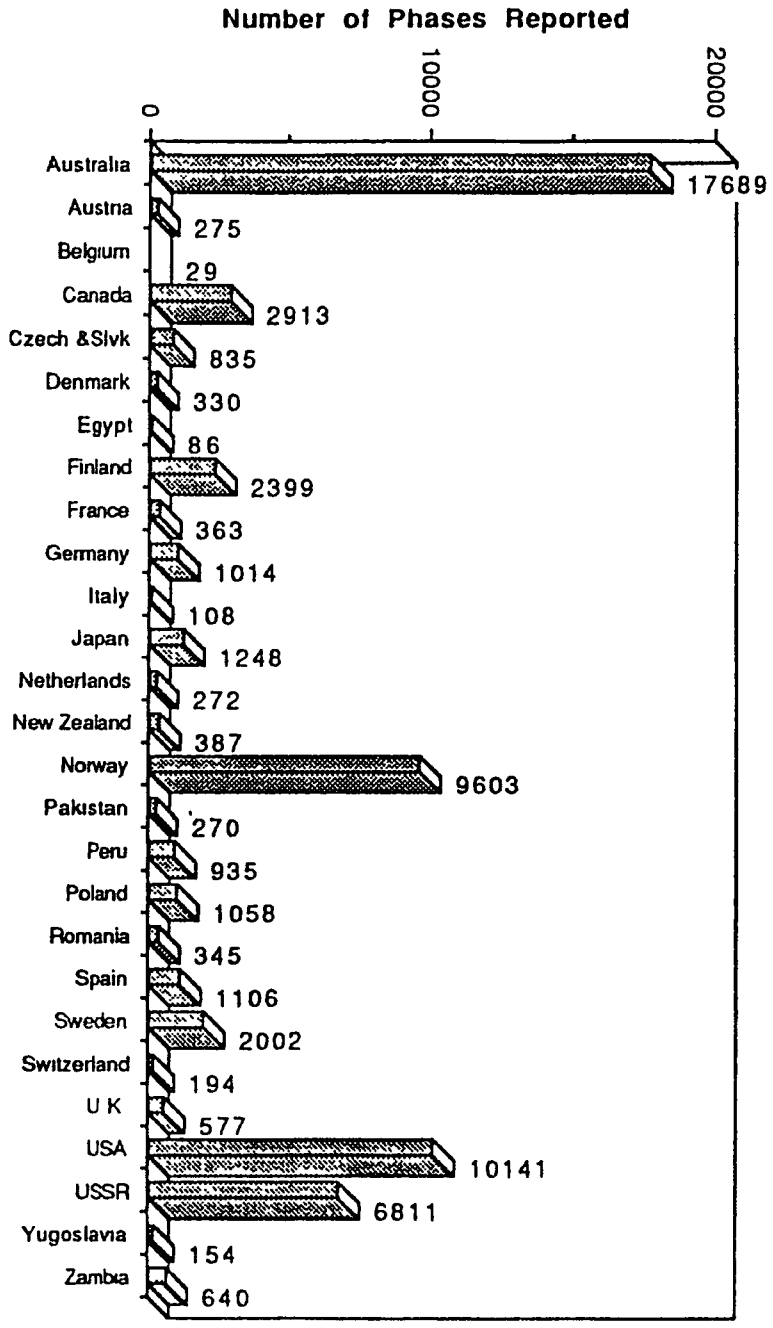


Figure 3.1: Number of seismic phases reported from each NDC during the main phase of GSETT-2

(d) Extraction of wave-form (level II) data

The procedures for routine wave-form reporting by NDCs are described in appendix A to conference room paper 190/Rev.4. Most NDCs fulfilled the wave-form segmentation and reporting procedures. Several NDCs were unable to report wave-form data because of the lack of appropriate digital instrumentation, communication facilities, or links (see chapter 5). Wave-form segmentation procedures were quite satisfactory for reporting teleseismic events. However, for local and regional events, there were occasions when the required lengths of wave-form segments did not encompass all potentially useful seismic phases. Although it was not mandatory to do so, several countries reported long-period wave-form segments, but in GSETT-2 these were rarely used by any of the EIDCs.

Although three-component short-period data were archived and analysed at NDCs, in most cases only the vertical-component wave-form data were reported, as required, to EIDCs.

(e) Events locations reported by NDCs

In a new and unique contribution, 17 countries reported about 5,000 event locations based only on national data. Eight of these reported locations based on data from local networks, 13 reported locations based on data from single stations, and 5 reported locations based on array data. Some countries used more than one method of reporting.

(f) Data messages

Twenty-two countries produced routine parameter and wave-form messages automatically, which helped to reduce format errors. Most of the data were received by EIDCs in time to use in producing their Initial Event Lists.

The four EIDCs requested data from NDCs in order to help them in improving their Current Event Lists. NDCs did not always respond to these requests. In some cases, the response time was much too long to be used in preparation of Current Event Lists or Final Event Bulletins. NDCs were entitled to request any wave-form segment from any participating station. Thirteen countries exercised this option during the full-scale test. Only a few countries had attempted this in the preparatory tests. About 15 per cent of these requests were not responded to. In addition, some responses were not fulfilled expeditiously, taking up to several days. NDCs sent general messages for a number of purposes; however, there is some question as to whether they were used in any way. As a result of experiences during the preparatory tests, NDCs were to transmit a weekly listing of their messages (transaction log). Countries were able to do this on a regular schedule. It was found that there was some ambiguity in the instructions for data request messages and general messages.

On a positive note, Final Events Bulletins were generally received (as bulletin messages) in a timely fashion (after about one week) by most NDCs; however, in a few cases, they were received only after about two weeks or longer.

(g) Data outages

Outages at NDCs and stations were not reported in detail; however, the information available suggests that most of the NDCs and stations were fully operational for approximately 95 per cent of the time. A clear definition of what constitutes a data outage is needed for better record-keeping, which, in turn, would allow a more detailed assessment.

(h) Quality control

There were no formal quality control measures for GSETT-2, but some level of quality control was exercised at all NDCs. This involved ensuring that analysts followed exactly the procedures set out in conference room paper 190/Rev.4 (message-formatting rules, parameter-reporting rules, etc.). The Group should consider making quality control part of the operating procedures.

(i) Resources

GSETT-2 was a large undertaking for many NDCs. The level of effort varied and depended on a number of factors - for instance, available resources, number and type of stations, level of preparedness, regional seismicity, etc. The level of effort that was necessary to carry out the test successfully had been generally underestimated by the participants. Well over 100 people were involved with NDC operations during the seven weeks of the full-scale test. To meet all schedules and adhere precisely to all procedures would have taken a significant increase in resources and well-trained personnel. Limitations in resources constrained most, if not all, countries to some degree in carrying out the test.

3.3 Conclusions

Detailed information about detector parameters used by participants is not available at the present time, and may never be; thus the results of these systems cannot be accurately assessed. It is recommended that a comprehensive evaluation of several different detectors operating on a common data set should be undertaken by several countries.

Procedures for reporting data from local and regional seismic events are inadequate. Special criteria should be developed for the reporting of local events.

Not all countries reported locations determined by NDCs when they were in a position to do so. During GSETT-2, such reports improved the accuracy of locations in many cases. For some stations azimuthally dependent regional models might improve location and magnitude determinations. When local network locations are reported, the data upon which they were based should be available upon request.

Not all countries reported long-period parameter data even when available, despite the clear instructions to do so in the conference room paper. Adequate reporting of such data is essential.

There was a varying degree of automation in use at NDCs. Further automated procedures would reduce the strain on manpower resources and are strongly recommended.

No formal quality control measures were defined for GSETT-2. Quality control should be made a specific part of the operating procedures of a future global system.

Useful comments were provided by NDCs in parameter reports, but not all of those comments were used in event location and phase association. A future global system should be able to accommodate more supplementary information of this kind. It is important that comments be formalized so that they can be interpreted automatically.

Chapter 4

EXPERIMENTAL INTERNATIONAL DATA CENTRES

4.1 Introduction

During GSETT-2, four EIDCs were operated, by Australia (Canberra, CNB), Sweden (Stockholm, STO), the Union of Soviet Socialist Republics, (Moscow, MOS), and the United States (Washington, D.C., WAS). Each EIDC operated independently and exchanged data and processing results on a daily basis in order to develop the final EIDC products. The EIDCs and resources required to operate them are described briefly below and in detail in the appendices to this report.

The main functions of the EIDCs were to:

Collect Level I and Level II data from the NDCs.

Maintain a complete database of all data received.

Allow NDCs unrestricted access to all data and messages less than two weeks old.

Respond to NDC requests for data and bulletins.

Exchange transaction logs with other EIDCs on a daily basis.

Request missing messages.

Automatically prepare Initial Event Lists (IELs) using all parameter data received by the cut-off time, and exchange these with other EIDCs.

Using wave-form analysis, prepare Current Event Lists (CELs) and exchange these with other EIDCs.

On a rotating basis, merge the latest CEL from each EIDC into a Final Event Bulletin (FEB) and distribute each FEB to all NDCs.

4.2 Inputs to EIDCs from NDCs

A total of about 65,000 phase detections were reported from 60 stations in 34 countries. Twenty-seven countries submitted a total of more than 80,000 wave-form segments from 48 stations.

The EIDCs received 30,000 messages (approximately 1 gigabyte of data) from the NDCs. In addition, over 3,000 duplicate messages (several hundred megabytes) were received. On a typical day the EIDCs received about 600 messages (approximately 16 megabytes of data), and on peak days twice this amount. More than 95 per cent of the data was wave-form data.

The largest volume of data (approximately 40 megabytes) received on one single day was received on 25 May; this was due to a combination of many phase detections the previous day and a large amount of data sent in response to

EIDC requests. About 10 per cent of the messages exchanged in the full-scale experiment were sent in response to EIDC requests. This was the first test of the NDC request function.

On 29 April a large earthquake, with more than 100 aftershocks, occurred in the western Caucasus. For this day alone, almost 3,000 phase detections were reported. Compared to earlier experiments in GSETT-2, the volumes of data received increased by a factor of two. The increase can partly be explained by the fact that more local and regional phases were reported by the NDCs. To cope with the unexpectedly large volumes, some EIDCs had to upgrade their hardware and software during the experiment.

Roughly 20 per cent of the phase detections arrived after the scheduled deadline, for IEL production. The times in the message headers indicate, however, that about half of these detections were sent prior to the deadline.

The agreed formats were in general found to be adequate. Only a few per cent of the wave-form messages could not be automatically parsed. More than 10 per cent of the parameter messages could not be automatically parsed. Most of the erroneous messages were submitted by countries which did not participate in the preparatory tests.

Transaction logs were received from 23 NDCs. They were, however, found to be of limited use for the EIDCs. In order to have been useful, the NDC transaction logs would have had to be received on a daily basis in a fully formalized message. This would have enabled timely and automatic checking of the reception of messages sent by the NDCs.

About 200 messages received by the EIDCs were corrections of previously received messages.

4.3 Requests to and responses from NDCs

During the full-scale test the request function to and from NDCs was tested for the first time.

The EIDCs received more than 300 request messages from 13 NDCs requesting wave-form data (80 per cent), bulletins (15 per cent), or parameter data or retransmission of missing or garbled messages (5 per cent). Not all of the NDC data requests were fulfilled. Reasons for this deficiency included software difficulties at EIDCs and NDCs, station or NDC outages and lack of understanding of the procedures.

Besides software difficulties, some EIDCs encountered problems owing to lack of fully automatic request-handling programs and insufficient manpower. Occasionally, requests concerning data not routinely reported could not be satisfied as the appropriate NDC could no longer access the data.

A few requests for data older than 15 days, i.e. data no longer required to be on-line, were also received by the EIDCs.

The EIDCs requested over 2,600 wave-form segments from NDCs; roughly 10 per cent of these requests were made on behalf of an NDC. In response, the EIDCs received more than 1,700 wave-form segments. The median response time as "experienced" by the requesting EIDC was 18 hours, i.e., within the required 24-hour limit. Frequently, NDCs which were unable to provide the requested data sent an explanatory message in response to the requests. Some typical reasons given were limited storage capacity, no detections, station outage or lost data.

As the request function of the NDCs and EIDCs had not been thoroughly tested during the preparatory tests, it became evident during the full-scale test that a number of issues had not been specified to the necessary level of detail. Some examples are given in the appendices.

Overall, the request functions at NDCs and EIDCs were not adequately tested during GSETT-2, mainly because of the heavy workload at NDCs and the lack of streamlined procedures.

4.4 Products of EIDCs during GSETT-2

The EIDCs started their analysis by calculating an Initial Event List (IEL) on the second day. The IELs were calculated by automatic association and location programs, and entirely based on NDC parameter reports arriving at the EIDCs before the end of day 1 (day 0 being the day when the event was recorded). During the following four days the EIDCs produced Current Event Lists (CELs), in which results from interactive analysis were included. The majority of the IELs and CELs were produced and exchanged on time by the EIDCs. Some EIDCs started the wave-form analysis on day 3; others included the results of the wave-form analysis only in the final CEL on day 6. This late inclusion of the results of interactive analysis was caused by the large workload and to some extent by limitations in hardware and software systems.

There were significant differences in the software used to incorporate the results of wave-form analysis in the CELs. Some EIDCs used the event list generated by the automatic association and location program as a start, from which they improved the event solutions in the interactive analysis. These EIDCs did not rerun the automatic program once the wave-form analysis had started. A different approach, used by other EIDCs, was to submit changes, such as added phases, retimed arrival times and changed association/disassociation of arrivals to particular events, to the automatic association and location software, which was then rerun for each CEL.

On day 7, one of the EIDCs, following a rotating schedule, compiled the Final Event Bulletin (FEB) and its abbreviated version (AFB) and distributed them to all the participants. Most of the FEBs were produced on time, but occasionally some EIDCs had minor delays in the compilation of the FEB. All but two FEBs were completed within eight days.

The merging of the four CELs into one FEB is a completely automatic process which follows the rules set out in appendix J of conference room paper 190/Rev.4. Some EIDCs, on their own initiative, applied checks of the

validity of defining observations. The number of events not fulfilling the GSETT-2 criteria decreased as the EIDCs improved and gained more experience. Due to software problems, some valid observations and some events fulfilling the GSETT-2 criteria were also rejected by mistake.

The agreed rules on how to merge CELs into FEBs were occasionally found to cause merging of events in a way which was not seismologically correct. For example, events occurring close in time and space were sometimes incorrectly merged together into one event. On other occasions, events which should have been grouped together were reported separately in the FEB, because they only had one defining observation in common.

4.5 Experience with data analysis

In the interactive data analysis, the EIDCs reviewed the wave-forms from the majority of the generated events. The EIDCs used the wave-form data to improve the reported parameter data, and to judge the validity of an event and its associated phases.

The improvements to parameter data mainly consisted of adding new arrivals, renaming phases and retiming arrivals. The EIDCs added roughly 7,000 new arrivals, and about 40 per cent of these were considered to be depth phases. Renaming and retiming was performed on roughly 5-10 per cent of all arrival data by those EIDCs using these options.

The NDCs reported over 6,500 long-period measurements, of which more than 50 per cent were noise measurements for detected short-period arrivals. Due to the large workload at the EIDCs, efforts were concentrated on establishing valid events. The EIDCs performed only very limited wave-form analysis on surface (Rayleigh) waves. However, it was possible to associate two thirds of the reported surface waves to events using the automatic association software.

Data from stations well distributed in distance and azimuth are required to determine the origin times and locations of seismic events accurately. To improve the processing it was necessary to request supplementary wave-form data from the NDCs. The EIDCs requested approximately 2,600 wave-forms from the NDCs and were able to identify several hundred new phases as a result.

By using a number of other parameters (azimuth, slowness and angle of incidence) in addition to signal arrival times to evaluate event hypocentre parameters, EIDCs were able to streamline the source determination procedure and improve the accuracy of source parameters.

As much as 80 per cent or more of the events in the automatically generated Event Lists were modified by the EIDCs in the interactive data analysis. Roughly half of the changes were major, affecting the event locations by more than 50 km and/or the event depth by more than 10 km.

When deciding whether an event was valid or not, the locations reported by the NDCs were of great value. Qualifying remarks, reported locations, distance and phase names were used by the EIDCs when judging whether a phase was defining or not.

More than 3,700 events were defined in the FEBs - on average 90 events per data day. Approximately 40 per cent of the events in the FEBs were reported by all four EIDCs, and 60 per cent by at least three EIDCs. More than 50 per cent of the reported phases could not be associated to an event by the EIDCs. This is similar to the experience from GSETT-1, and also similar to what is observed at agencies such as the National Earthquake Information Center in the United States or the International Seismological Centre in the United Kingdom. Approximately half of the unassociated phases were of local or regional origin as reported by the NDCs.

Depth is an important diagnostic aid for source identification. One way of improving the accuracy of determining the depth of an event is the use of depth phases in event solutions. The usefulness of wave-form data at the EIDCs was clearly demonstrated by the fact that as many as 40 per cent of the depth phases were added by the EIDCs, as a direct result of wave-form data analysis. Compared to the first technical test conducted in 1984, the number of reported arrivals per data day increased by a factor of 3 and the number of events defined in the Final Event Bulletins increased by a factor of 4.

4.6 Inter-EIDC procedures

The EIDCs produced and exchanged approximately 3,000 messages (190 megabytes of data). Of these, approximately 2,000 were request messages, 800 were bulletin messages and 200 were system messages. The volume of data was dominated by bulletin messages (170 megabytes). In order to maintain identical databases, the EIDCs exchanged daily logs of all messages received. These logs were compared automatically and missing messages were requested from the appropriate EIDC database. Some EIDCs encountered problems and could not reconcile their databases during the main phase of the test.

The number of data retransmission requests made by the EIDCs as a result of the database reconciliation process was less than 5 per cent of the total number of messages. Nearly all of the requests for retransmission were satisfied by the EIDCs automatically.

No formal reconciliation of the CELs took place among the EIDCs. The daily exchange of CELs, however, permitted analysts to review the results of the other EIDCs' processing and thereby improve their own event lists.

4.7 Data availability and archiving at EIDCs

The EIDCs provided NDCs with interactive access to the EIDC databases. In this way, NDCs could browse through and retrieve data and send it to their own databases. The Ad Hoc Group has not agreed on a common interface for the NDCs to access the EIDC databases, but some EIDCs supplied menus to guide the NDCs through the contents of their databases. Several NDCs tested these procedures.

The EIDCs maintained on-line interactively accessible databases for 15 data days for most of the time. Due to the unexpectedly large volumes of data, some EIDCs were unable to keep all 15 data days on-line at all times.

4.8 Location capability achieved during GSETT-2

The general performance of a seismological monitoring system can be judged in terms of the quality of the FEB. This performance is closely linked to the adequacy of the technical components of the system; it especially depends on the spatial distribution of seismic stations.

Using again GSETT-1 as a reference (18.7 events per day), nearly five times as many events were located during GSETT-2 (89 events per day). This comparison indicates a remarkable increase in the number of located events. Figure 4.1 shows the events located by the EIDCs, as reported in the FEBs, during the main phase of GSETT-2.

A large percentage of event locations was derived from very few station readings. These locations have to be investigated in detail to separate real events from artificial associations. In this context, those events reflecting local or regional recordings (within 20°) should be studied separately. The association of crustal P phases did not appear to be very reliable or consistent. This association often ignored the experience and advice of the NDC analysts. In addition, it appeared that too little regard was taken of qualitative remarks supplied by the NDCs.

Finally, an important aspect of GSETT-2 was to demonstrate the usefulness and effectiveness of including wave-form data in the processing at the future IDCs so as to improve the quality of the event bulletins. Although the EIDCs convincingly showed the effort they made in this respect (about 7,000 new phases were added after inspection of the wave-forms), the influence on the quality of the event locations needs further study.

4.9 Phase association

In the processing of seismic network data, individual phase detections corresponding to the same seismic event must be properly associated and grouped together. For teleseismic monitoring using global network data, such techniques are well established. The inclusion of regional and local phases in the phase association procedure leads to a considerable increase in the complexity of the task.

A clear correlation between station sensitivity and unassociated phases can be stated in general. A preliminary investigation of the unassociated signals indicated that most of them stem from small events at regional or even local distances from the sensitive stations of the network. Compared to GSETT-1, the percentage of unassociated phases remained essentially unchanged (it was 53 per cent during GSETT-2). Taking into account those local or regional phases which were associated by NDCs reduced the number of unassociated phases during GSETT-2 to 44 per cent. This is similar to the experience at other international seismological centres. Contrary to the expectations expressed in the Group's previous reports, the availability of wave-form data did not automatically reduce the number of unassociated phases.

As experience at other international seismological centres shows, the number of unassociated phases is also not reduced by increasing the number of stations.

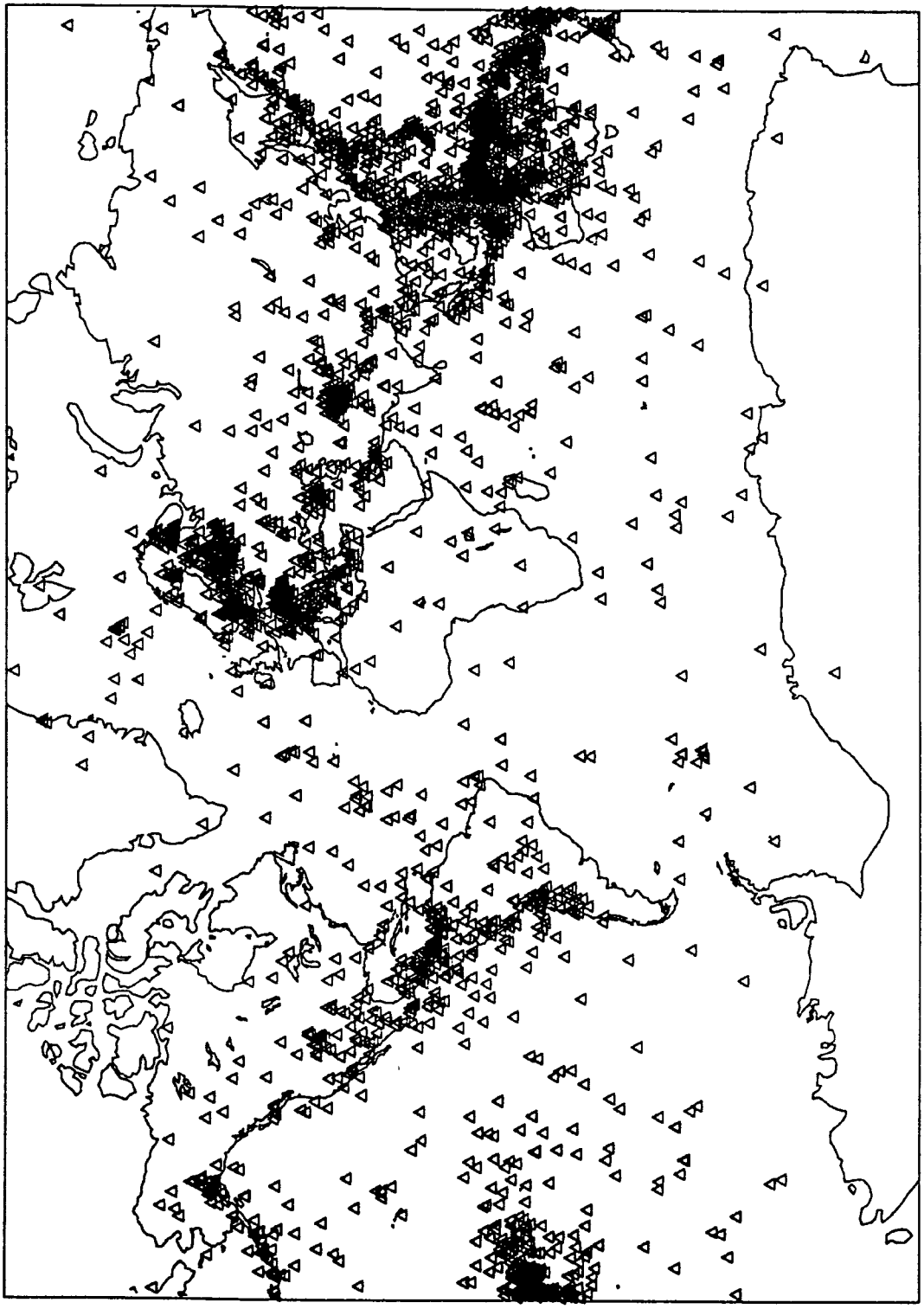


Figure 4.1. EVENTS LOCATED BY THE EIDCS DURING THE MAIN PHASE OF GSETT-2.
The figure includes all epicenters reported in the Final Event Bulletins.

To reduce the number of unassociated phases is an important aspect of the further evaluation of GSETT-2. Techniques for automatic association of regional seismic phases recorded by a single array should be investigated. The use of additional information from local networks, available to NDCs, in the association procedure at EIDCs has to be discussed.

Most important, the unavoidable trade-off between detection threshold and unassociated phases in any seismic network has to be considered within the framework of a future monitoring system.

4.10 Reprocessing experiment

One of the problems encountered during GSETT-2 was that not all data arrived at the EIDCs within the required schedules, and that some data did not arrive at all the EIDCs. After the main phase of GSETT-2 had been completed, the four EIDCs decided to reconcile their databases so as to obtain one complete and agreed database of GSETT-2. They also agreed to reprocess five days' data representative of the seismic activity during GSETT-2. Preliminary results indicate that the products of the EIDCs improved after reprocessing, and that the resulting bulletins are more consistent than was achieved during Phase 3 of GSETT-2. This can be exemplified by the percentage of events in the FEBs common to all EIDCs, which has increased from 40 per cent to 80 per cent.

The results of the reprocessing experiment will be included in the appendices to this report.

4.11 Conclusions

The methods and procedures adopted by the Group for GSETT-2 were in general found to be adequate. Although the EIDCs were unable to review all the wave-form data, some EIDCs were able to review most of the wave-form data sent from the NDCs. The difficulties experienced during GSETT-2 by the EIDCs were due to a number of factors: lack of experience with global network data processing, ambiguities in the GSETT-2 procedures, the unanticipated volume of data, and limited hardware, software and manpower resources.

The review of wave-form data at the EIDCs was found to be useful for improving the quality of the final bulletin.

New methods, specifically developed for routine analysis of wave-form data from a global network, need to be developed and tested. The database collected during GSETT-2 will be of great value for developing these methods and for the seismological evaluation of GSETT-2.

Not all the EIDCs were able to provide easy access to their stored data for the NDCs.

Although some problems became evident, GSETT-2 demonstrated that it was possible to run four EIDCs according to the instructions given for the main phase of the experiment.

Chapter 5

COMMUNICATIONS

5.1 Introduction

Communications links to support the exchange of messages between the participants were an important and integral part of the global system established for GSETT-2. During the planning stages of GSETT-2, it became evident that the ambitions of the experiment were such that recent advances in telecommunications technology would have to be taken into account wherever possible in establishing these links. The exchange of large amounts of wave-form (level II) data, in particular, required the use of efficient communication means.

The communications system established for GSETT-2 comprised high-capacity dedicated links between the four EIDCs, as well as connections between each of the NDCs and the inter-EIDC network. This system evolved through several stages, over a period of approximately two years or more. This stepwise approach and gradual build-up to the main phase of GSETT-2 proved to be very beneficial. Many participants were able to test different communication means and choose the optimum one. Others were able to familiarize themselves with and exploit the newest developments in communications technology, from experience gained during preparatory experiments. The communications system established for GSETT-2 and the international cooperation associated with it represents an unprecedented undertaking in seismology.

5.2 Links between NDC and EIDCs

A large variety of different types of physical links and associated protocols were used by the NDCs for their communication with the EIDCs. These communication means ranged from computer-to-computer file transfer on high-speed dedicated links to low-speed telex lines. The various communication means adopted basically reflected what was available to each participant and what was needed in terms of capacity, but factors such as economy, technical experience and knowledge of the NDC staff were also important in this regard. The appendices provide in tabular form an overview of communication means and protocols used by each individual NDC. Some of the experience gained with the various types of links is summarized below.

The WMO Global Telecommunications System (WMO/GTS)

WMO/GTS is a worldwide communications network established and operated jointly by the 155 WMO member States and territories for the exchange of meteorological data. The WMO has authorized the use of GTS for the exchange of seismic data in experiments conducted by the Ad Hoc Group.

During preparations for GSETT-2, a special communications node was set up in Moscow to receive and transmit parameter and wave-form data using WMO/GTS. Altogether seven NDCs made some use of, or tried to make use of, WMO/GTS

channels during Phase 3 of GSETT-2. Some countries that had earlier used WMO/GTS were able to establish computer-to-computer connections with EIDCs prior to the start of Phase 3 and made extensive use of these links.

GSETT-2 demonstrated that WMO/GTS in general proved useful for transmitting parameter data, from NDCs to EIDCs, when appropriate arrangements had been made well in advance. Attempts at transmitting large volumes of messages, such as wave-form data, from NDCs to EIDCs, and bulletins from EIDCs to NDCs, however, met with little success. It was noted that WMO/GTS is still the only means of transmitting seismic data in many parts of the world. Details on the use of WMO/GTS during GSETT-2 are given in the appendices.

Other types of links between NDCs and EIDCs

Approximately 99 percent of the messages sent from NDCs to EIDCs during Phase 3 of GSETT-2 were transmitted using other means than WMO/GTS. Examples of such other types of links were dedicated high-speed links, public networks like PSDN, Internet and Bitnet, and dial-up lines. Only minor problems were associated with the use of links in this broad category. A number of countries also established links for alternative routing of their messages to the EIDCs, and were able to use these when problems occurred with their "main" circuit.

The satellite-based INMARSAT system was tested and used for the first time for the exchange of parameter and wave-form data. It was noted that INMARSAT is a highly flexible system that can be used virtually all over the globe and thus offers a potential for communication to and from locations not serviced by other modern communication means. Data transfer rates on the INMARSAT system that will permit transmission of large volumes of data are available today or will be in the near future.

During GSETT-2, the vast majority of messages were exchanged by direct computer-to-computer file transfer, using a variety of different links and protocols. The largest volumes were exchanged using the ftp protocol. Three countries used the electronic mail (X.400 protocol) successfully. Other protocols used were VAXSPI, UUCP and Kermit. There were in general very few difficulties related to the use of communication protocols, and NDC and EIDC operators cooperated closely to solve the few problems that occurred.

5.3 Inter-EIDC network

To fulfil the basic GSETT-2 requirements of reliable and timely exchange of data between the EIDCs, high-speed dedicated links were established. The dedicated links installed were as follows: 9.6-kbps satellite link between Canberra and Washington, a 56-kbps fibre optical link between Washington and Stockholm, a 19.2-kbps satellite link between Washington and Moscow, and a 9.6-kbps phone line between Stockholm and Moscow.

During the first week of Phase 3 of GSETT-2, three of the inter-EIDC links were fully functional. The line between Moscow and Washington became operational on 29 April, seven days into the test. After this date, all

four lines were operational, with only very short breaks, throughout the duration of GSETT-2, with one exception: the line between Canberra and Washington broke on 2 June and was not available for four days. Alternative routings via PSDN and Internet were established, however, and all the data were successfully transmitted, although with some delay.

The Washington Communications Hub and the Stockholm Communications Node were particularly important elements in the inter-EIDC network, as they facilitated data exchange and interconnected NDCs and EIDCs through a variety of communications links. The Washington Communications Hub provided a communications gateway in Europe through the Zurich Node. On a daily basis, the Washington Communications Hub produced and distributed to all participants a "traffic report", listing all messages that had been exchanged. Figure 5.1 shows the inter-EIDC links, and also the links used by the NDCs to transmit data to the EIDCs.

No general communications technique was adopted for the inter-EIDC network as a whole. Rather, it was decided to test simultaneously systems using different methods to ensure proper routing of messages. A set of rules was developed that defined how the various components of the systems were to interact with each other.

Considering the complexity of the inter-EIDC network and the different communications methods used, it is fair to state that the inter-EIDC network worked very well during Phase 3 of GSETT-2. Only very few of the problems encountered in the course of GSETT-2 could be associated with failures in components of this network.

More details on the inter-EIDC network are given in the appendices.

The total cost (no manpower costs included) incurred by the four EIDCs for establishing and operating the inter-EIDC network through Phases 1, 2 and 3 of GSETT-2 was approximately US$ 1 million.

5.4 Data formats and volumes, reliability and timelinesss

The Ad Hoc Group developed a common format for data and messages that were exchanged during GSETT-2. This format is well documented in Conference room paper 190/Rev.4. Since this format had already been used throughout the preparatory tests, only a few countries had difficulties adhering to it during Phase 3. These were mainly countries that had not participated in GSETT-2 prior to Phase 3.

The total volume of data received by each of the four EIDCs during Phase 3 of GSETT-2 was approximately one gigabyte. The total amount of data submitted by all the NDCs varied from 12 to 29 megabytes per data day. In an appendix, the distribution of this total volume among the originating NDCs and EIDCs is tabulated. The table gives the total number and volume of messages sent from each NDC, and the corresponding number and volume of messages received by each of the four EIDCs. Also given are figures for the messages generated by each of the four EIDCs and sent to the other EIDCs.

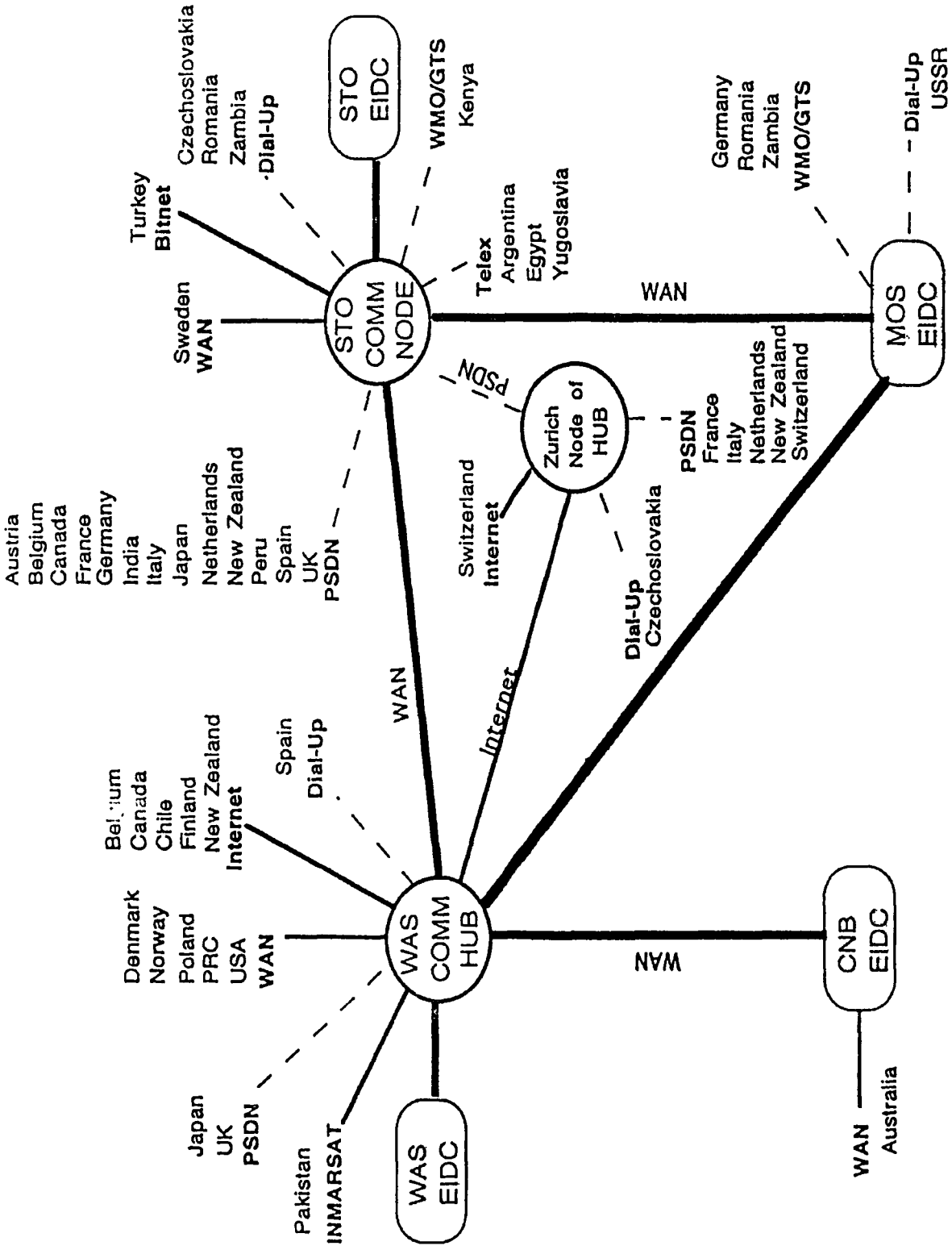


Figure 5.1 COMMUNICATIONS LINKS USED DURING PHASE 3 OF GSETT-2

Note: This Figure shows the inter-EIDC links and the NDC to EIDC links used to transmit data to the EIDCs

The main reason for the difference between the amounts of data sent and received was duplication of messages. This duplication was caused by the aforementioned simultaneous use of different communications methods among the EIDCs. Even though the amount of duplicate messages was considerably reduced during Phase 3 compared with earlier stages of GSETT-2, the duplicate messages accounted for about 15 per cent of the total data volume. The presence and handling of these messages in their databases was not a major problem for the EIDCs; still, it represented an added load, and extra care should be taken in possible future experiments to avoid this situation, which appears in particular to result from the handling of message requests.

Loss of data in the communications circuits is another reason for differences between the amounts of data transmitted and received. The EIDCs performed, on a daily schedule during GSETT-2, comparisons of their message logs to overcome discrepancies between message databases. This procedure revealed that about 1 per cent (the figure was a little higher for Moscow) of the total volume of messages was initially missing in the databases of each of the EIDCs. After completing this reconciliation process with an exchange among EIDCs of missing messages, the discrepancies between what was sent from the NDCs and what was eventually contained in the EIDC data bases were minimal. This meant that the number of cases in which NDC messages did not reach any of the EIDCs was very low. In any case, it was possible for missing messages to be identified from the sequence numbering system adopted, and thus requests for retransmission of missing data were sent to the message originator.

Data compression achemes were successfully used by the majority of the participating countries. Relative to uncompressed data, this reduced the data volume by approximately half, without loss of information content.

Statistics on message "travel times" (the difference between the time a message reached the recipient and the sending time reported in the message header) show that the majority of the links performed in a timely manner, such that the GSETT-2 schedules could be adhered to. There were, however, several occasions on which the message travel times were surprisingly long, also for high-speed connections, causing message arrival after the deadline. Most of these late messages were, however, incorporated at a later time and are reflected in the event bulletins. Still, these cases should be further investigated in order to fully understand the nature and causes of the delays, and to gain further experience for future tests.

5.5 Conclusions

Overall, the communications network established for GSETT-2, comprising links between NDC and EIDCs as well as inter-EIDC links, worked very well. With very few exceptions, the elements of this network fulfilled the basic objective of enabling the reliable and expeditious exchange of large amounts of seismic data and other messages.

The volume of data exchanged during Phase 3 was twice as great as was expected from the earlier stages of GSETT-2. This is attributed in part to the fact that more stations joined the experiment, but also to a higher emphasis on the reporting of local and regional events. It is noteworthy that the communications network, which was basically designed and implemented during the earlier stages, was still able to cope with the data volumes during Phase 3.

One of the reasons for the successful exchange of data during GSETT-2 was the redundancy built into the links. Although it was not a requirement for the conduct of GSETT-2, the availability of alternative routings made the communications network very robust.

In short, GSETT-2 demonstrated that communication means and associated protocols are available today that permit extensive data exchange within a global seismic monitoring system.

Glossary

Seismological terms and abbreviations used in this document

Amplitude	The maximum deflection from a zero reading of a recorded seismic wave-form
Analog wave-form	A seismic wave-form in a non-numeric continuous representation
Array	An ordered arrangement of seismometers, the data from which are transmitted to a central computer and processed jointly in order to increase the possibility of distinguishing weak signals from noise
Arrival	The appearance of a seismic signal on a seismic record as determined visually or automatically using a set of criteria
Beamforming	The process of adding together time-shifted signals from the individual instruments of a seismic array
Bitnet	A worldwide data communications network
Body wave	A seismic wave that propagates through the Earth's interior (longitudinal P-waves and transverse S-waves)
Body wave magnitude	See mb
Broad-band instruments	Seismographs that record a wide range of signal frequencies, thus encompassing the short-period and long-period bands
CEL	Current Event List, produced at Experimental International Data Centres
Degree	A measure of distance (one degree (1°) is approximately 111 km)
Depth phases	Seismic waves that have been reflected from the Earth's surface above the seismic source
Digital wave-form	A seismic signal represented as a sequence of numbers
EIDC	Experimental International Data Centre operated during GSETT-2
Epicentre	The point on the Earth's surface which is directly above the seismic source

FEB	Final Event Bulletin, produced at Experimental International Data Centres
Filtering (frequency filtering)	The processing of operating on any signal to enhance particular frequencies and suppress others
Filtering (polarization filtering)	A technique for enhancing one particular mode of wave propagation and suppressing others by combining the outputs of three-component recordings
GSE	Ad Hoc Group of Scientific Experts to Consider International Co-operative Measures to Detect and Identify Seismic Events
GSETT (or GSETT-1)	The Ad Hoc Group of Scientific Experts' first technical test, conducted in 1984
GSETT-2	The Ad Hoc Group of Scientific Experts' second technical test, described in this report
GTS	Global Telecommunications System of the World Meteorological Organization
Hypocenter	Location of the source of an event
IDC	International Data Centre in the envisaged global system
IEL	Initial Event List, produced at Experimental International Data Centres
INMARSAT	International Maritime Satellite Organization
INTELSAT	International Telecommunications Satellite Organization
INTERNET	A collection of worldwide communications networks that are interconnected
kbps	Kilobits per second; a measure of data transmission rate
Level I data	Data (on amplitude, period, arrival time of waves, etc.) used for the description of seismic signals (often referred to as "parameter data")

Level II data	Segments of seismic data as recorded at individual stations (often referred to as "wave-form data")
Lg	A seismic phase that propagates in the upper crustal layers of the earth. For continental paths, Lg is often the strongest phase on a seismogram
Local events	A seismic event located within about 2° (about 200 kilometres distance from a station)
Long-period (LP) waves	Seismic waves of period more than 20 seconds
LP	See long-period waves
Magnitude	A measure of the size of a seismic event, as determined from seismograph observations
mb	Body wave magnitude, usually calculated from recorded vertical-component short-period P-wave data
Ms	Surface wave magnitude, usually calculated from recorded vertical-component long-period Rayleigh wave data
NDC	National Data Centre operated by individual countries
Parameter	A quantity (usually a number) describing a particular feature of the recorded data
Parse	To verify that a message conforms to a specified format, and resolve the message into its component parts
P-wave	A seismic body-wave of the compressional type
PKP-wave	A P-wave that has propagated through the Earth's core
Period	The time interval corresponding to one cycle of a vibration on a seismogram
PSDN	International Packet-Switched Data Network
Quality control	Measures and procedures to ensure that a satisfactory quality of data is produced at every stage of processing in the global system

Rayleigh wave	A seismic surface wave characterized by an elliptical motion in the vertical plane
Regional event	A seismic event located between about 2° and about 20° distance from a station (beyond 200 kms to about 2,200 kms)
S-wave	A seismic body wave of the shear type
Seismogram	A seismic record containing wave-forms covering a certain time interval (e.g. 24 hours)
Seismograph, seismometer	Instruments designed to detect Earth motions caused by seismic events
Short-period (SP) waves	Seismic waves of period around 1 second
SNR	Signal-to-noise ratio
SP	See short-period waves
STA/LTA	The ratio between short-term and long-term average amplitude of a seismic wave-form
Surface wave	A seismic wave that propagates along the upper layers of the Earth
Surface wave magnitude	See Ms
T-phase	A seismic wave for which the propagation path is partly through the ocean
Teleseismic event	A seismic event located beyond about 20° distance from a station (2,200 kms and beyond)
Three-component seismograph	A seismograph system recording earth motion in three perpendicular directions (vertical, north-south, east-west)
X.25	A transmission protocol used for the Packet-Switched Data Network
WAN	Wide area network
WMO	World Meteorological Organization

CONFERENCE ON DISARMAMENT

CD/1145
13 March 1992

Original: ENGLISH

PROGRESS REPORT TO THE CONFERENCE ON DISARMAMENT ON THE THIRTY-THIRD SESSION OF THE AD HOC GROUP OF SCIENTIFIC EXPERTS TO CONSIDER INTERNATIONAL COOPERATIVE MEASURES TO DETECT AND IDENTIFY SEISMIC EVENTS

1. The Ad Hoc Group of Scientific Experts to Consider International Cooperative Measures to Detect and Identify Seismic Events, initially established in pursuance of the decision taken by the Conference of the Committee on Disarmament on 22 July 1976, held its thirty-third formal session from 2 to 13 March 1992, in the Palais des Nations, Geneva, under the Chairmanship of Dr. Ola Dahlman of Sweden. This was the twenty-fifth session of the Group, convened under its new mandate by the decision of the Committee on Disarmament at its 48th meeting on 7 August 1979.

2. The Ad Hoc Group is open to all member States of the Conference on Disarmament. It is also open on a standing basis to all non-member States which have been invited upon their request by the Conference on Disarmament to participate in its work. Accordingly, scientific experts and representatives of the following member States of the Conference on Disarmament participated in the session: Australia, Belgium, Canada, China, Czech and Slovak Federal Republic, Egypt, Germany, Hungary, Italy, Japan, Mexico, Netherlands, Poland, Romania, Russian Federation, Sweden, United Kingdom of Great Britain and Northern Ireland and the United States of America.

3. On the basis of previous invitations by the Conference on Disarmament, Scientific experts and representatives from the following non-member States of the Conference on Disarmament participated in the session: Austria, Denmark, Finland, New Zealand, Norway, Spain and Switzerland.

4. During the session, 28 papers containing information on national investigations related to the work of the Group were presented by experts from Australia, Austria, Czech and Slovak Federal Republic, Egypt, Finland, Germany, Japan, Norway, Peru, Romania, Russian Federation, Sweden, United Kingdom of Great Britain and Northern Ireland, and United States of America.

5. The Ad Hoc Group completed a technical and factual evaluation of its Second Technical Test (GSETT-2). The results are contained in its sixth main report, being submitted to the Conference on Disarmament for its consideration as document CD/1144. The Group envisages submitting during its next session extensive appendices to the sixth report, which will contain detailed technical material.

6. The Group noted that as a result of GSETT-2, a unique seismological database has been established and is being used as the basis for the ongoing comprehensive scientific evaluation by the Group. The Group noted with appreciation that the United States delegation had compiled this database on compact discs and had distributed them to all participants.

7. The Group considers that the results of the comprehensive scientific evaluation, together with the results of GSETT-2 (CD/1144), form a basis for reassessing the concepts for a global monitoring system proposed by the Group in its fifth report to the Conference presented in 1989 (CD/903 and Corr.1). Such a reassessment, which will also take into account recent scientific, technical and other developments, will be reported on during the first part of the 1993 session of the Conference.

8. The Ad Hoc Group continued its discussions on the future work of the Group remaining under its current mandate as regards the development and testing of the scientific aspects of a global system for international cooperative measures to detect and identify seismic events. The Group expressed the view that much valuable work remains to be done on the development of the global system taking into account an assessment of the implications of the results of GSETT-2 and advances in relevant technology.

The Group preliminarily discussed specific recommendations in this regard that include specific procedures for an experimental system of international exchange of data on seismic events and realistic testing of its components. This testing would include additional bilateral and multilateral cooperative experiments and would strive to have the widest possible global participation. The work would, inter alia, include:

- "CD-station" design and testing
- Site selection studies and experimental station deployments
- Use of new data communication technologies
- Study of the feasibility of reducing the number of IDCs including a proposal on the use of one IDC
- Study of the feasibility of the use of "open" stations
- Network studies in relation to network capability
- Development of detailed instructions for further experimental testing of the refined concepts
- Development of cost estimates

9. The Ad Hoc Group envisages continuing the discussion of its future work, including the incorporation of new technologies, at its next session.

10. The Ad Hoc Group noted with appreciation the convening of an informal technical workshop by the United States in Dallas, Texas, from 3 to 5 December 1991, to evaluate the results of GSETT-2, particularly the activities at national facilities. Many participants of the Group were able to attend and contribute to the workshop. This aided in the preparation of the Group's report on GSETT-2.

11. The Ad Hoc Group suggests that its next session, subject to approval by the Conference on Disarmament, should be convened from 27 July to 7 August 1992.

CONFERENCE ON DISARMAMENT

CD/1146
CD/CW/WP.392
17 March 1992

Original: ENGLISH

POLAND

Solid-phase extraction as a possible way of chemical warfare agents sampling for their analysis in laboratories under the Chemical Weapons Convention

The problem of sampling chemical warfare agents and transporting such samples to an analytical laboratory is difficult and not fully resolved yet. The sampling procedure and the form in which the sample is transported or stored may be decisive for the result of the analysis.

In contemporary analytical methods which allow identification of substances by comparison with standards or which allow their structures to be determined the quantity of sample may be very small. This is also true for quantitative analysis. Therefore small samples are sufficient for a full analysis of substances suspected to be chemical warfare agents.

To sample different toxic substances such as polyaromatic hydrocarbons and pesticides, solid-phase extraction (SPE) is very often used. To date it is not used for sampling chemical warfare agents. But it may be used in many cases for the purpose. Using this method, samples may be taken from installations, from water and from solutions in different organic solvents. Such solutions may be obtained after washing off some contaminated materials or by extraction of soil. SPE may also be used for the isolation of chemical warfare agents or their metabolites from biological matrices such as plasma or serum. The matrix frequently interferes with the determination of the analyte and SPE is a way of separating them.

The SPE method relies on adsorbing the substance to be analysed on adsorbent in a column; liquid chemical warfare agents directly and liquid and solid ones from solvent by an adsorbent. In this manner instead of transporting liquid or a large volume of solution we need only to transport a small column with adsorbed substance. The columns after closing firmly may be transported safely. Even after damage to the columns the adsorbed substance is desorbed very slowly and the chance of producing a harmful concentration of the substance in air is very small.

The adsorbed substance is eluted from the column using small amount of proper solvent receiving pure solution, much more concentrated in comparison with initial solution and good for analysis using different analytical methods.

Commercial columns filled with different adsorbents are available. The materials and equipment for SPE are produced by several firms.

J.T. Baker SPE system e.g. comprises polypropylene columns prepacked with high capacity sorbents contained between two polyethylene sinters. Glass columns with teflon sinters are also available. The sorbent choices comprise reverse phase, normal phase or ion exchange silica gel-based bonded phases. Columns are also available packed with normal phase adsorbents or size exclusion gel.

The volume of columns for extraction are 1, 3 or 6 ml. According to their capacity the weight of adsorbents in them is 100, 200, 500 or 1,000 mg.

The scheme of the SPE column is shown in figure 1.

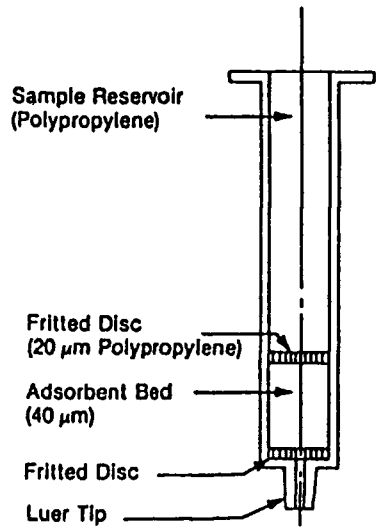


Fig. 1. Disposable extraction column.

Using the SPE columns it is possible to extract substances from sample solution volumes which range from a few hundred microlitres to several hundred millilitres.

SPE columns can be processed by vacuum, positive pressure or centrifugation. The most convenient is to process the columns by vacuum using a special system - figure 2.

SPE is a sample preparation technique based on the separation mechanisms of liquid chromatography. In SPE the solubility and functional group interactions of substance to be analysed, sorbent and solvent are optimized to effect retention or elution.

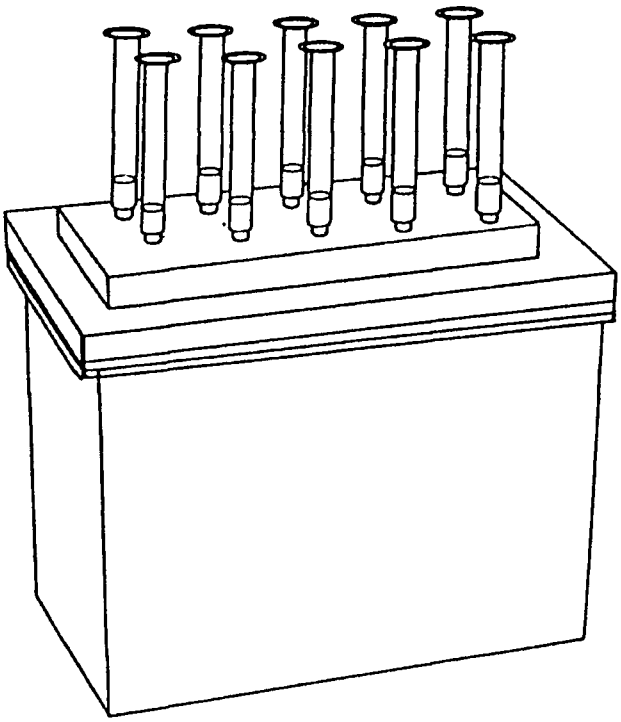


Fig. 2. Vacuum manifold extraction system.

When the analyst has a liquid substance to be analysed he is able to sorb it on the adsorbent at a place of sampling and to elute it in the laboratory. For a polar analyte a polar adsorbent should be used. For nonpolar substances to be analysed nonpolar adsorbents and solvents are recommended.

Having analytical samples as solutions sample cleanup and concentration are possible. When the analyst has a sample containing an analyte more polar than associated impurities, normal phase conditions should be selected. In this case the sample should be dissolved in a solvent (e.g. methylene chloride) less polar than the adsorbent (silica). Upon passing the solution through the column, the polar analyte is adsorbed by the silica; the relatively nonpolar impurities have greater affinity for the solvent and pass through the column. The polar analyte is then removed from the column by the addition of a more polar solvent which competes more effectively for the analyte than the silica itself. Thus, the polar analyte has actually been separated from the less polar impurities.

When the impurities are more polar than the analyte, a reversed phase system applies. The sample is dissolved in a polar medium and the solution is passed through a nonpolar adsorbent. The polar impurities remain in the solvent system and pass through the column. The less polar analyte is adsorbed by the low polarity adsorbent. Addition of a nonpolar solvent then elutes it thus separating it from polar impurities.

Reversed phase solid-phase extraction is convenient for concentrating organic substances in water. When a 75 ml reservoir is attached to 6 ml nonpolar octadecyl column connected to a vacuum manifold, the processing of a 500 ml aqueous sample becomes a simple operation. The entire 500 ml aqueous sample is drawn through the reservoir and the nonpolar organic trace components are retained on the adsorbent. Water and polar components pass through the column. Elution of the analyte with 500 μl of appropriate solvent provides a simple cleanup and a 1,000 fold concentration of the analyte in the eluate.

The above technique of trace enrichment is appropriate for field sampling of large volumes of water. The method can be simplified by the insertion of disposable columns in a vacuum manifold connected via a trap to a small portable pump.

For sampling chemical warfare agents normal phase chromatography with polar adsorbents and with polar bonded silicas and reversed phase chromatography with nonpolar bonded silicas are used.

Normal phase chromatography refers to a system in which the adsorbent is more polar than the mobile phase. Silica, alumina and activated magnesium silicate are used for SPE; silica is the most common. The polar surface of silica adsorbs slightly or moderately polar compounds dissolved in nonpolar or slightly polar organic solvents. Such analytes are eluted from the column with polar solvents. However, water soluble organics are too polar as they adhere so tightly to silica that elution by any solvent is impractical.

Using normal phase chromatography with polar bonded silicas compounds of moderate to strong polarity adsorb on them. The sample is dissolved in a solvent possessing as low polarity as possible; the analyte is eluted with a solvent of high polarity.

Reversed phase chromatography refers to any system in which the adsorbent is less polar than the mobile phase. Here nonpolar phenyl, octyl and actadecyl substituted siloxanes adsorb nonpolar or slightly polar analytes dissolved in polar solvents. These bonded phases are used for the analysis of trace organics in aqueous matrices in clinical and environmental analysis. The analytes are generally eluted from these sorbents with solvents of low polarity.

The examples of sorbents for SPE are shown in Table 1.

The scheme showing how the selection of an SPE system depends upon sample type is shown in Table 2.

Table 1. The examples of sorbents for solid-phase extraction

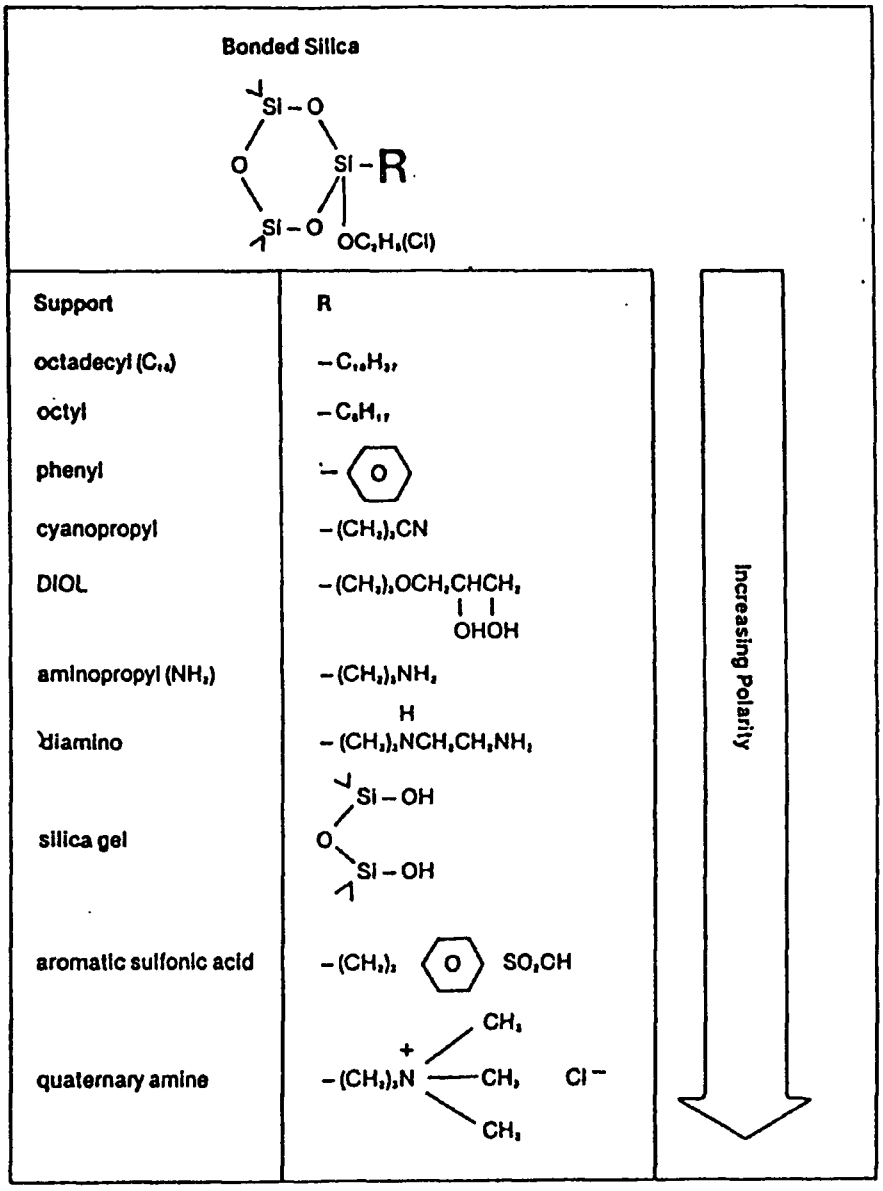
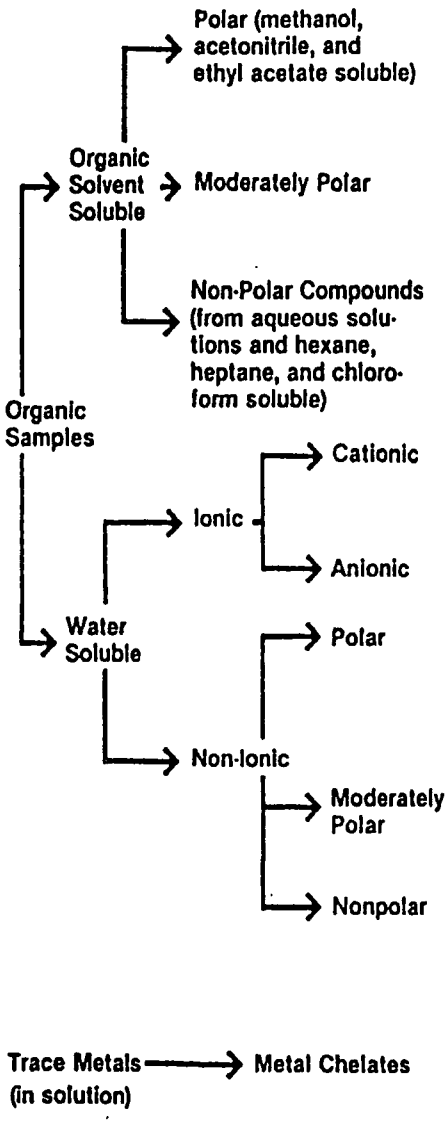


Table 2. The selection of solid-phase extraction system



Separation Mechanism[1]	Extraction Column[2]	Elution Solvent[3,4]
NPC	Diol Cyano Amino Diamino	Isopropanol Methanol
LSC	Silica Gel	Isopropanol Methanol
RPC	Octadecyl Octyl Phenyl Cyano	Hexane Chloroform Methanol
IEC	Aromatic Sulfonic Acid	Acid
IEC	Quaternary Amine	Base
NPC	Diol Cyano Amino Diamino	Isopropanol Methanol
LSC	Silica Gel	Isopropanol Methanol
RPC	Octadecyl Octyl Phenyl Cyano	Hexane Chloroform Methanol
IEC	Amino Diamino	Low pH Aqueous 1-8N HCl Strong Chelators (Thiourea)

[1]Separation Mechanisms
LSC: Liquid-Solid Chromatography (Adsorption)
NPC: Normal-Phase Chromatography (Bonded Phase Partition)
RPC: Reversed Phase Chromatography (Bonded Phase Partition)
IEC: Ion-Exchange Chromatography (Bonded Phase Ion-Exchange)
[2]Extraction columns listed in degree of increasing polarity
[3]Eluting solvents listed in degree of increasing polarity
[4]Selective elution can be performed by combining two or more miscible solvents to achieve various degrees of polarity

Solid-phase extraction is performed in four steps - figure 4.

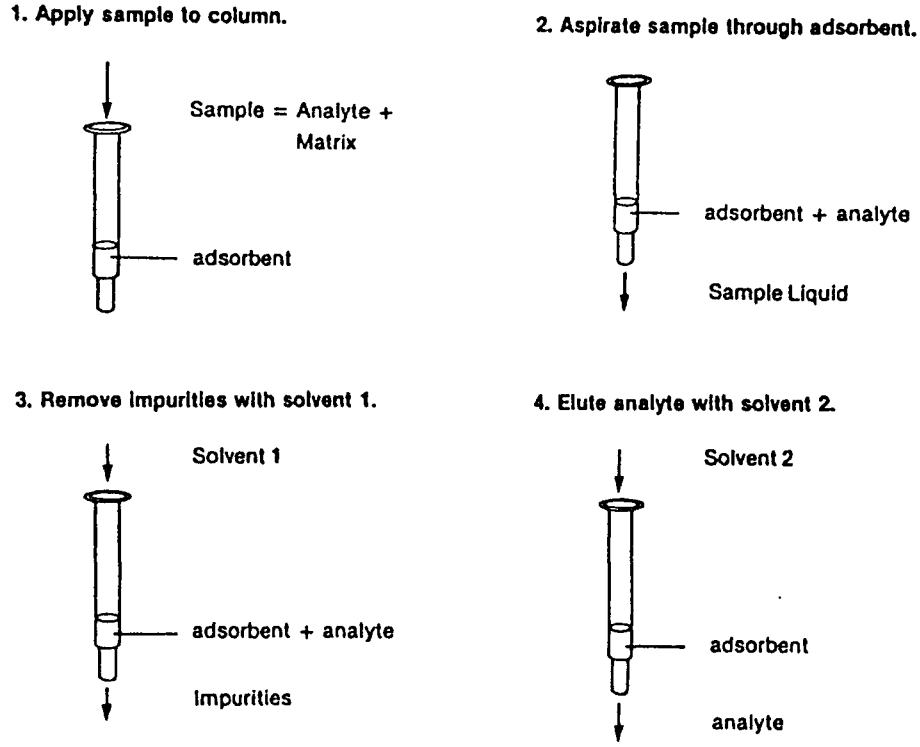


Fig. 4. Solid-phase extraction process

Ways of using SPE for collecting and preparing samples of chemical warfare agents are not well recorded. But it is possible to prepare procedures useful for sampling substances during inspections envisaged in the convention on chemical weapons.

CONFERENCE ON DISARMAMENT

CD/1147
25 March 1992

ENGLISH
Original: ENGLISH and FRENCH

LETTER DATED 20 MARCH 1992 FROM THE PERMANENT REPRESENTATIVES OF THE REPUBLIC OF KOREA AND THE DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA ADDRESSED TO THE SECRETARY-GENERAL OF THE CONFERENCE ON DISARMAMENT TRANSMITTING THE TEXT OF THE AGREEMENT ON RECONCILIATION, NON-AGGRESSION AND EXCHANGES AND COOPERATION BETWEEN THE SOUTH AND THE NORTH, AS WELL AS THE TEXT OF THE JOINT DECLARATION OF THE DENUCLEARIZATION OF THE KOREAN PENINSULA

We have the honour to transmit to you the texts of both the Agreement on Reconciliation, Non-aggression and Exchanges and Cooperation between the South and the North and the Joint Declaration of the Denuclearization of the Korean Peninsula, both of which came into effect on 19 February 1992.

We should be very grateful if you, Sir, in accordance with the established practice, would arrange for both texts to be issued as one official document of the Conference on Disarmament and distributed to all delegations, including those of the member States and States with observer status.

(Signed): Soo Gil Park
Ambassador
Permanent Representative
of the Republic of Korea

(Signed): Ri Tcheul
Ambassador
Permanent Representative
of the Democratic People's
Republic of Korea

GE.92-60809

Agreement on Reconciliation, Non-aggression and Exchanges and Cooperation between the South and the North

The South and the North,

In keeping with the yearning of the entire Korean people for the peaceful unification of the divided land;

Reaffirming the three principles of unification set forth in the July 4 (1972) South-North Joint Communique;

Determined to remove the state of political and military confrontation and achieve national reconciliation;

Also determined to avoid armed aggression and hostilities, reduce tension and ensure peace;

Expressing the desire to realize multi-faceted exchanges and cooperation to advance common national interests and prosperity;

Recognizing that their relations, not being a relationship between states, constitute a special interim relationship stemming from the process towards reunification;

Pledging to exert joint efforts to achieve peaceful unification;

Hereby have agreed as follows:

CHAPTER I

SOUTH-NORTH RECONCILIATION

Article 1 : The South and the North shall recognize and respect each other's system.

Article 2 : The two sides shall not interfere in each other's internal affairs.

Article 3 : The two sides shall not slander or vilify each other.

Article 4 : The two sides shall not attempt any actions of sabotage or subversion against each other.

Article 5 : The two sides shall endeavor together to transform the present state of armistice into a solid state of peace between the South and the North and shall abide by the present Military Armistice Agreement (of July 27, 1953) until such a state of peace has been realized.

Article 6 : The two sides shall cease to compete or confront each other in the international arena and shall cooperate and endeavor together to promote national prestige and interests.

Article 7 : To ensure close consultations and liaison between the two sides, South-North Liaison Offices shall be established at Panmunjon within three (3) months after the coming into force of this Agreement.

Article 8: A South-North Political Committee shall be established within the framework of the South-North High-Level Talks within one (1) month of the coming into force of this Agreement with a view to discussing concrete measures to ensure the implementation and observance of the accords on South-North reconciliation.

CHAPTER II
SOUTH-NORTH NON-AGGRESSION

Article 9 : the two sides shall not use force against each other and shall not undertake armed aggression against each other.

Article 10 : Differences of views and disputes arising between the two sides shall be resolved peacefully through dialogue and negotiation.

Article 11 : The South-North demarcation line and areas for non-aggression shall be identical with the Military Demarcation Line specified in the Military Armistice Agreement of July 27, 1953 and the areas that have been under the jurisdiction of each side until the present time.

Article 12 : To implement and guarantee non-aggression, the two sides shall set up a South-North Joint Military Commission within three (3) months of the coming into force of this Agreement. In the said Commission, the two sides shall discuss and carry out steps to build military confidence and realize arms reduction, including the mutual notification and control of major movements of military units and major military exercises, the peaceful utilization of the Demilitarized Zone, exchanges of military personnel and information, phased reductions in armaments including the elimination of weapons of mass destruction and attack capabilities, and verifications thereof.

Article 13 : A telephone hotline shall be installed between the military authorities of the two sides to prevent accidental armed clashes and their escalation.

Article 14 : A South-North Military Committee shall be established within the framework of the South-North High-Level Talks within one (1) month of the coming into force of this Agreement in order to discuss concrete measures to ensure the implementation and observance of the accords on non-aggression and to remove military confrontation.

CHAPTER III
SOUTH-NORTH EXCHANGES AND COOPERATION

Article 15 : To promote an integrated and balanced development of the national economy and the welfare of the entire people, the two sides shall engage in economic exchanges and cooperation, including the joint development of resources, the trade of goods as domestic commerce and joint ventures.

Article 16 : The two sides shall carry out exchanges and cooperation in various fields such as science and technology, education, literature and the arts, health, sports, environment, and publishing and journalism including newspapers, radio and television broadcasts and publications.

Article 17 : The two sides shall promote free intra-Korean travel and contacts for the residents of their respective areas.

Article 18 : The two sides shall permit free correspondence, reunions and visits between dispersed family members and other relatives and shall promote the voluntary reunion of divided families and shall take measures to resolve other humanitarian issues.

Article 19 : The two sides shall reconnect railroads and roads that have been cut off and shall open South-North sea and air transport routes.

Article 20 : The two sides shall establish and link

facilities needed for South-North postal and telecommunications services and shall guarantee the confidentiality of intra-Korean mail and telecommunications.

Article 21 : The two sides shall cooperate in the international arena in the economic, cultural and various other fields and carry out joint undertakings abroad.

Article 22 : To implement accords on exchanges and cooperation in the economic, cultural and various other fields, the two sides shall establish joint commissions for specific sectors, including a Joint South-North Economic Exchanges and Cooperation Commission, within three (3) months of the coming into force of this Agreement.

Article 23 : A South-North Exchanges and Cooperation Commission shall be established within the framework of the South-North High-Level Talks within one (1) month of the coming into force of this Agreement with a view to discussing concrete measures to ensure the implementation and observance of the accords on South-North exchanges and cooperation.

CHAPTER IV
AMENDMENTS AND EFFECTUATION

Article 24 : This Agreement may be amended or supplemented by concurrence between the two sides.

Article 25 : This Agreement shall enter into force as of the day the two sides exchange appropriate instruments following the completion of their respective procedures for bringing it into effect.

Signed on December 13, 1991

Chung Won-shik

Prime Minister
Republic of Korea

Chief delegate
of the South
delegation to the
South-North High-Level
Talks

Yon Hyong-muk

Premier
Administration Council
Democratic People's
Republic of Korea

Head of the
North delegation
to the South-North
High-Level Talks

Joint Declaration of the Denuclearization of the Korean Peninsula

The South and the North,

Desiring to eliminate the danger of nuclear war through denuclearization of the Korean peninsula, and thus create an environment and conditions favorable for peace and peaceful unification of our country and contribute to peace and security in Asia and the world.

Declare as follows:

1. The South and the North shall not test, manufacture, produce, receive, possess, store, deploy or use nuclear weapons.

2. The South and the North shall use nuclear energy solely for peaceful purposes.

3. The South and the North shall not possess nuclear reprocessing and uranium enrichment facilities.

4. The South and the North, in order to verify the denuclearization of the Korean peninsula, shall conduct inspection of the objects selected by the other side and agreed upon between the two sides, in accordance with procedures and methods to be determined by the South-North Joint Nuclear Control Commission.

5. The South and the North, in order to implement this joint declaration, shall establish and operate a South-North Joint Nuclear Control Commission within one (1) month of the effectuation of this joint declaration.

6. This Joint Declaration shall enter into force as of the day the two sides exchange appropriate instruments following the completion of their respective procedures for bringing it into effect.

Signed on January 20, 1992

Chung Won-shik
Prime Minister of the
Republic of Korea

Chief delegate
of the South
delegation to the
South-North
High-Level Talks

Yon Hyong-muk
Premier of the
Administration Council
of the Democratic
People's Republic of
Korea

Head
of the North
delegation to the
South-North
High-Level Talks

DOCUMENT IDENTIQUE A L'ORIGINAL

DOCUMENT IDENTICAL TO THE ORIGINAL