

No. 26967

**INTERNATIONAL ATOMIC
ENERGY AGENCY
and
CHINA**

**Agreement for the application of safeguards in China. Signed
at Vienna on 20 September 1988**

Authentic text: Chinese.

*Registered by the International Atomic Energy Agency on 11 December
1989.*

**AGENCE INTERNATIONALE
DE L'ÉNERGIE ATOMIQUE
et
CHINE**

**Accord relatif à l'application de garanties en Chine. Signé à
Vienne le 20 septembre 1988**

Texte authentique : chinois.

*Enregistré par l'Agence internationale de l'énergie atomique le 11 décembre
1989.*

[TRANSLATION¹ — TRADUCTION²]

AGREEMENT³ BETWEEN THE PEOPLE'S REPUBLIC OF CHINA
AND THE INTERNATIONAL ATOMIC ENERGY AGENCY FOR
THE APPLICATION OF SAFEGUARDS IN CHINA

Whereas the People's Republic of China (hereinafter referred to as "China") has declared that it neither stands for nor encourages nuclear proliferation, nor does it help other countries to develop nuclear weapons;

Whereas China has also declared that in its exports of nuclear material and equipment, it will require the recipient countries to accept safeguards by the International Atomic Energy Agency (hereinafter referred to as the "Agency") and that nuclear material and equipment imported to China will only be used for peaceful purposes;

Whereas China has decided to voluntarily place some of its civilian nuclear facilities under Agency safeguards by concluding a safeguards agreement;

Whereas China has made this offer and entered into this Agreement for the purpose of promoting the peaceful application of nuclear energy throughout the world for the benefit of mankind and supporting the objectives set forth in the Statute of the Agency⁴ (hereinafter referred to as the "Statute");

Whereas the purpose of a safeguards agreement giving effect to this offer by China would thus necessarily differ from the purpose of safeguards agreements between the Agency and the non-nuclear-weapon States;

Whereas it is in the interest of the Member States of the Agency that, without prejudice to the principles and integrity of the Agency's safeguards system, the financial and other resources employed by the Agency for the implementation of this Agreement should not exceed those required for attaining the objective of the Agreement;

And whereas the Agency is authorized, pursuant to Article III of the Statute, to conclude such a safeguards agreement;

Now, therefore, China and the Agency have agreed as follows:

PART I

BASIC UNDERTAKING

Article 1

(a) China shall accept the application of safeguards by the Agency, in accordance with the terms of this Agreement, on all source or special fissionable material in peaceful nuclear facilities to be designated by China within its territory with a view to enabling the Agency to verify that such material is not withdrawn, except as

¹ Translation supplied by the International Atomic Energy Agency.

² Traduction fournie par l'Agence internationale de l'énergie atomique.

³ Came into force on 18 September 1989, the date on which the Agency received from China written notification that its constitutional and statutory requirements had been met, in accordance with article 24.

⁴ United Nations, *Treaty Series*, vol. 276, p. 3, and vol. 471, p. 334.

provided for in this Agreement, from those facilities while such material is subject to safeguards under this Agreement.

(b) China shall, upon entry into force of this Agreement, provide the Agency with a List of the facilities referred to in paragraph (a) of this Article and may, in accordance with the procedures set forth in Part II of this Agreement, add facilities to or remove facilities from the List as it deems appropriate.

(c) China may, in accordance with the procedures set forth in this Agreement, withdraw nuclear material subject to safeguards under this Agreement from facilities selected by the Agency in accordance with Article 2(b).

APPLICATION OF SAFEGUARDS

Article 2

(a) The Agency shall have the right to apply safeguards, in accordance with the terms of this Agreement, on all source or special fissionable material in facilities which are on the List provided in accordance with Article 1(b), with a view to enabling the Agency to verify that such material is not withdrawn, except as provided for in this Agreement, from those facilities while such material is subject to safeguards under this Agreement.

(b) The Agency shall, from time to time, select facilities on the List provided by China in accordance with Article 1(b), in which the Agency wishes to apply safeguards, and shall notify China of such facilities. The facility shall be considered to be selected upon receipt by China of such notification.

IMPLEMENTATION OF SAFEGUARDS

Article 3

(a) China and the Agency shall co-operate to facilitate the implementation of the safeguards provided for in this Agreement.

(b) The source or special fissionable material subject to safeguards under this Agreement shall be that material in the facilities selected by the Agency in accordance with Article 2(b) at any given time.

(c) The safeguards to be applied by the Agency under this Agreement shall be implemented on the basis of the procedures specified in this Agreement.

Article 4

The safeguards provided for in this Agreement shall be implemented in a manner designed:

- (a) To avoid hampering the economic and technological development of China or international co-operation in the field of peaceful nuclear activities, including international exchange of nuclear material;
- (b) To avoid undue interference in China's peaceful nuclear activities, and in particular in the operation of facilities; and
- (c) To be consistent with prudent management practices required for the economic and safe conduct of nuclear activities.

Article 5

(a) The Agency shall take every precaution to protect commercial and industrial secrets and other confidential information coming to its knowledge in the implementation of this Agreement.

(b) (i) The Agency shall not publish or communicate to any State, organization or person any information obtained by it in connection with the implementation of this Agreement, except that specific information relating to the implementation thereof may be given to the Board of Governors of the Agency (hereinafter referred to as "the Board") and to such Agency staff members as require such knowledge by reason of their official duties in connection with safeguards, but only to the extent necessary for the Agency to fulfil its responsibilities in implementing this Agreement.

(ii) Summarized information on nuclear material subject to safeguards under this Agreement may be published upon decision of the Board if China agrees thereto.

Article 6

(a) The Agency shall, in implementing safeguards pursuant to this Agreement, take full account of technological developments in the field of safeguards, and shall make every effort to ensure optimum cost-effectiveness and the application of the principle of safeguarding effectively the flow of nuclear material subject to safeguards under this Agreement by use of instruments and other techniques at certain strategic points to the extent that present or future technology permits.

(b) In order to ensure optimum cost-effectiveness, use shall be made, for example, of such means as:

- (i) Containment as a means of defining material balance areas for accounting purposes;
- (ii) Statistical techniques and random sampling in evaluating the flow of nuclear material; and
- (iii) Concentration of verification procedures on those stages in the nuclear fuel cycle involving the production, processing, use or storage of nuclear material from which nuclear weapons or other nuclear explosive devices could readily be made, and minimization of verification procedures in respect of other nuclear material, on condition that this does not hamper the Agency in applying safeguards under this Agreement.

SYSTEM OF ACCOUNTING FOR AND CONTROL OF NUCLEAR MATERIAL OF CHINA

Article 7

(a) China shall maintain a system of accounting for and control of all nuclear material subject to safeguards under this Agreement.

(b) The Agency shall apply safeguards in accordance with the provisions of this Agreement in such a manner as to enable the Agency to verify, in ascertaining that there has not been any withdrawal of nuclear material, except as provided for in this Agreement, from facilities while such material is subject to safeguards under this Agreement, findings of the accounting and control system of China. The Agency's verification shall include, *inter alia*, independent measurements and observations conducted by the Agency in accordance with the procedures specified in Part II. The Agency, in its verification, shall take due account of the technical effectiveness of the accounting and control system of China.

PROVISION OF INFORMATION TO THE AGENCY

Article 8

(a) In order to ensure the effective implementation of safeguards under this Agreement, China shall, in accordance with the provisions set out in Part II, provide the Agency with information concerning nuclear material subject to safeguards under this Agreement and the features of facilities relevant to safeguarding such material.

(b) (i) The Agency shall require only the minimum amount of information and data consistent with carrying out its responsibilities under this Agreement.

(ii) Information pertaining to facilities shall be the minimum necessary for safeguarding nuclear material subject to safeguards under this Agreement.

(c) The Agency shall be prepared to examine, if China so requests, on premises of China design information which China regards as being of particular sensitivity. Such information need not be physically transmitted to the Agency provided that it remains readily available for further examination by the Agency on premises of China.

AGENCY INSPECTORS

Article 9

(a) (i) The Agency shall secure the consent of China to the designation of Agency inspectors to China.

(ii) If China, either upon proposal of a designation or at any other time after a designation has been made, objects to the designation, the Agency shall propose to China an alternative designation or designations.

(iii) If, as a result of the repeated refusal of China to accept the designation of Agency inspectors, inspections to be conducted under this Agreement would be impeded, such refusal shall be considered by the Board, upon referral by the Director General of the Agency (hereinafter referred to as "the Director General"), with a view to its taking appropriate action.

(b) China shall take the necessary steps to provide Agency inspectors with facilities for effective discharge by them of their functions under this Agreement.

(c) The visits and activities of Agency inspectors shall be so arranged as:

(i) To reduce to a minimum the possible inconvenience and disturbance to China and to the peaceful nuclear activities inspected; and

(ii) To ensure protection of industrial secrets or any other confidential information coming to the inspectors' knowledge.

PRIVILEGES AND IMMUNITIES

Article 10

China shall apply to the Agency (including its property, funds and assets) and to its inspectors and other officials, performing functions under this Agreement, the relevant provisions of the Agreement on the Privileges and Immunities of the International Atomic Energy Agency¹ as accepted by China.

¹ United Nations, *Treaty Series*, vol. 374, p. 147.

CONSUMPTION OR DILUTION OF NUCLEAR MATERIAL

Article 11

Safeguards shall terminate on nuclear material subject to safeguards under this Agreement upon determination by the Agency that the material has been consumed, or has been diluted in such a way that it is no longer usable for any nuclear activity relevant from the point of view of safeguards, or has become practicably irrecoverable.

WITHDRAWAL AND TRANSFER OF NUCLEAR MATERIAL

Article 12

(a) If China intends to exercise its right to withdraw nuclear material from facilities selected in accordance with Article 2(b), China shall notify the Agency of such withdrawal. Safeguards shall terminate on nuclear material in respect of which such notification has been given.

(b) Nothing in this Agreement shall affect the right of China to transfer material subject to safeguards under this Agreement to destinations not within or under the jurisdiction of China. China shall provide the Agency with information with respect of such transfers in accordance with Article 89. The Agency shall keep records of each such transfer and, where applicable, of the re-application of safeguards to the transferred nuclear material.

PROVISIONS RELATING TO NUCLEAR MATERIAL TO BE USED
IN NON-NUCLEAR ACTIVITIES*Article 13*

Where nuclear material subject to safeguards under this Agreement is to be used in non-nuclear activities, such as the production of alloys or ceramics, China shall agree with the Agency, before the material is so used, on the circumstances under which the safeguards on such material may be terminated.

FINANCE

Article 14

China and the Agency will bear the expenses incurred by them in implementing their respective responsibilities under this Agreement. However, if China or persons under its jurisdiction incur extraordinary expenses as a result of a specific request by the Agency, the Agency shall reimburse such expenses provided that it has agreed in advance to do so. In any case the Agency shall bear the cost of any additional measuring or sampling which inspectors may request.

THIRD PARTY LIABILITY FOR NUCLEAR DAMAGE

Article 15

China shall ensure that any protection against third party liability in respect of nuclear damage, including any insurance or other financial security, which may be available under its laws or regulations shall apply to the Agency and its officials for

the purpose of the implementation of this Agreement in the same way as that protection applies to nationals of China.

SETTLEMENT OF CLAIMS

Article 16

Any claim by China against the Agency or by the Agency against China in respect of any damage resulting from the implementation of safeguards under this Agreement, other than damage arising out of a nuclear incident, shall be settled in accordance with international law.

MEASURES RELATING TO VERIFICATION

Article 17

If the Board, upon report of the Director General, decides that an action by China is essential and urgent in order to ensure verification that nuclear material subject to safeguards under this Agreement is not withdrawn, except as provided for in this Agreement, from facilities selected in accordance with Article 2(b), the Board may call upon China to take the required action without delay, irrespective of whether procedures have been invoked pursuant to Article 21 for the settlement of a dispute.

Article 18

If the Board, upon examination of relevant information reported to it by the Director General, finds that the Agency is not able to verify that nuclear material subject to safeguards under this Agreement is not withdrawn, except as provided for in this Agreement, from facilities selected in accordance with Article 2(b), the Board may call upon China to remedy the situation forthwith. In the event there is a failure to take fully corrective action within a reasonable time, the Board may make the reports provided for in paragraph C of Article XII of the Statute and may also take, where applicable, the other measures provided for in that paragraph. In taking such action the Board shall take account of the degree of assurance provided by the safeguards measures that have been applied and shall afford China every reasonable opportunity to furnish the Board with any necessary reassurance.

COOPERATION BETWEEN CHINA AND THE AGENCY

Article 19

(a) In co-operating in the implementation of this Agreement, China and the Agency shall, at the request of either, consult each other about any question arising out of the interpretation or application of this Agreement.

(b) For the purposes specified in the preceding paragraph a Liaison Group shall be established, composed of representatives of China and the Agency. The Group shall meet at the request of either party to this Agreement.

Article 20

China shall have the right to request that any question arising out of the interpretation or application of this Agreement be considered by the Board. The Board shall invite China to participate in the discussion of any such question by the Board.

SETTLEMENT OF DISPUTES

Article 21

Any dispute arising out of the interpretation or application of this Agreement, except a dispute with regard to a finding of the Board under Article 18 or an action taken by the Board pursuant to such a finding, shall be settled by negotiation or other procedures agreed to by China and the Agency. Where the parties agree to submit such dispute to an arbitral tribunal, it shall be composed as follows: China and the Agency shall each designate one arbitrator, and the two arbitrators so designated shall elect a third, who shall be the Chairman. A majority of the members of the arbitral tribunal shall constitute a quorum, and all decisions shall require the concurrence of two arbitrators. The arbitral procedure shall be fixed by the arbitral tribunal. The decisions of the arbitral tribunal shall be binding on China and the Agency.

SAFEGUARDS UNDER OTHER AGREEMENTS

Article 22

(a) In the event that China notifies the Agency of any other agreement calling for the application of safeguards to certain nuclear material in China, the Agency shall, if so requested by China, apply safeguards under this Agreement while it is in force, to that material, or to such other nuclear material which is equivalent to it in amount and composition. China and the Agency shall ensure that nuclear material subject to safeguards under this Agreement shall be at all times at least equivalent in amount and composition to that which would be required to be safeguarded in China under the agreements in question. The detailed arrangements for the implementation of this provision shall be specified in the Subsidiary Arrangements provided for in Article 39.

(b) In the case where either party to this Agreement gives notice of its termination under Article 26, China and the Agency shall, if China so requests, conclude, without delay, appropriate arrangements to enable the Agency to continue the application of safeguards to the nuclear material referred to in paragraph (a) upon the termination of this Agreement.

AMENDMENT OF THE AGREEMENT

Article 23

(a) China and the Agency shall, at the request of either, consult each other on amendment to this Agreement.

(b) All amendments shall require the agreement of China and the Agency.

ENTRY INTO FORCE AND DURATION

Article 24

This Agreement or any amendments thereto shall enter into force on the date on which the Agency receives from China written notification that constitutional and statutory requirements of China for entry into force have been met.

Article 25

The Director General shall promptly inform all Member States of the Agency of the entry into force of this Agreement, and of any amendments thereto.

Article 26

This Agreement shall remain in force for an indefinite period. However, either party to this Agreement may, upon giving six months's notice to the other party, terminate this Agreement if, after consultation between them that party considers that the purpose for which this Agreement was intended can no longer be served.

PART II

GENERAL PROVISIONS

Article 27

The purpose of this part of the Agreement is to specify the procedures to be applied in the implementation of the safeguards provisions of Part I.

OBJECTIVE OF SAFEGUARDS

Article 28

The objective of the safeguards procedures set forth in this part of the Agreement is the timely detection of withdrawal of significant quantities of nuclear material from facilities selected in accordance with Article 2(b), other than withdrawal carried out in accordance with the terms of this Agreement.

Article 29

For the purpose of achieving the objective set forth in Article 28, material accountancy shall be used as a safeguards measure of fundamental importance, with containment and surveillance as important complementary measures.

Article 30

The technical conclusion of the Agency's verification activities shall be a statement, in respect of each material balance area, of the amount of material unaccounted for over a specific period, and giving the limits of accuracy of the amounts stated.

SYSTEM FOR ACCOUNTING FOR AND CONTROL
OF NUCLEAR MATERIAL OF CHINA*Article 31*

Pursuant to Article 7 the Agency, in carrying out its verification activities, shall make full use of China's system of accounting for and control of all nuclear material subject to safeguards under this Agreement and shall avoid unnecessary duplication of China's accounting and control activities.

Article 32

China's system of accounting for and control of all nuclear material subject to safeguards under this Agreement shall be based on a structure of material balance

areas, and shall make provision, as appropriate and specified in the Subsidiary Arrangements, for the establishment of such measures as:

- (a) A measurement system for the determination of the quantities of nuclear material received, produced, shipped, lost or otherwise removed from inventory, and the quantities on inventory;
- (b) The evaluation of precision and accuracy of measurements and the estimation of measurement uncertainty;
- (c) Procedures for identifying, reviewing and evaluating differences in shipper/receiver measurements;
- (d) Procedures for taking a physical inventory;
- (e) Procedures for the evaluation of accumulations of unmeasured inventory and unmeasured losses;
- (f) A system of records and reports showing, for each material balance area, the inventory of nuclear material and the changes in that inventory including receipts into and transfers out of the material balance area;
- (g) Provisions to ensure that the accounting procedures and arrangements are being operated correctly; and
- (h) Procedures for the provision of reports to the Agency in accordance with Articles 57 through 63 and 65 through 67.

STARTING POINT OF SAFEGUARDS

Article 33

Safeguards under this Agreement shall not apply to material in mining or ore processing activities, as well as to uranium or thorium until they have reached the stage of the nuclear fuel cycle where they are of composition and purity suitable for fuel fabrication or isotopic enrichment.

CHANGES IN FACILITY LIST

Article 34

China may, at any time, notify the Agency of any facility or facilities to be added to or removed from the List provided for in Article 1(b):

(a) In case of addition to the List, the notification shall specify the facility or facilities to be added to the List and the date upon which the addition is to take effect;

(b) In the case of removal from the List of a facility or facilities then currently selected in accordance with Article 2(b):

- (i) The Agency shall be notified in advance, other than in exceptional circumstances, and the notification shall specify: the facility or facilities being removed, the date of removal, and the quantity and composition of the nuclear material contained therein at the time of notification;
- (ii) Any facility in respect of which notification has been given in accordance with sub-paragraph (i) shall be removed from the List, as well as from the Listing provided for in Article 39, and the nuclear material contained therein shall cease

to be subject to safeguards under this Agreement in accordance with and at the time specified in the notification by China.

(c) In any case of removal from the List of a facility or facilities not then currently selected in accordance with Article 2(b), the notification shall specify the facility or facilities being removed and the date of removal. Such facility or facilities shall be removed from the List at the time specified in the notification by China.

TERMINATION OF SAFEGUARDS

Article 35

(a) Safeguards shall terminate on nuclear material subject to safeguards under this Agreement, under the conditions set forth in Article 11. Where the conditions of that Article are not met, but China considers that the recovery of nuclear material subject to safeguards under this Agreement from residues is not for the time being practicable or desirable, China and the Agency shall consult on the appropriate safeguards measures to be applied.

(b) Safeguards shall terminate on nuclear material subject to safeguards under this Agreement, when it is withdrawn in accordance with Article 12(a). China shall notify the Agency in advance of such withdrawal, except in exceptional circumstances. The notification shall specify: the facility or facilities from which nuclear material is being withdrawn, the date of its withdrawal, and the quantity and composition of such material. Safeguards shall terminate from the time the nuclear material is withdrawn.

(c) Safeguards shall terminate on nuclear material subject to safeguards under this Agreement, under the conditions set forth in Article 13, provided that China and the Agency agree that such nuclear material is practicably irrecoverable.

EXEMPTIONS FROM SAFEGUARDS

Article 36

At the request of China, the Agency shall exempt nuclear material from safeguards, as follows:

- (a) Special fissionable material, when it is used in gram quantities or less as a sensing component in instruments;
- (b) Nuclear material, when it is used in non-nuclear activities in accordance with Article 13, if such nuclear material is recoverable; and
- (c) Plutonium with an isotopic concentration of plutonium-238 exceeding 80%.

Article 37

At the request of China the Agency shall exempt from safeguards nuclear material that would otherwise be subject to safeguards, provided that the total quantity of nuclear material which has been exempted in China in accordance with this Article may not at any time exceed:

- (a) One kilogram in total of special fissionable material, which may consist of one or more of the following:
 - (i) Plutonium;
 - (ii) Uranium with an enrichment of 0.2 (20%) and above, taken account of by multiplying its weight by its enrichment; and

- (iii) Uranium with an enrichment below 0.2 (20%) and above that of natural uranium, taken account of by multiplying its weight by five times the square of its enrichment;
 - (b) Ten metric tons in total of natural uranium and depleted uranium with an enrichment above 0.005 (0.5%);
 - (c) Twenty metric tons of depleted uranium with an enrichment of 0.005 (0.5%) or below; and
 - (d) Twenty metric tons of thorium;
- or such greater amounts as may be specified by the Board for uniform application.

Article 38

If nuclear material, exempted from safeguards, is to be processed or stored together with nuclear material subject to safeguards under this Agreement, provision shall be made for the re-application of safeguards thereto.

SUBSIDIARY ARRANGEMENTS

Article 39

- (a) China and the Agency shall make Subsidiary Arrangements which shall:
- (i) Contain a Listing of those facilities selected in accordance with Article 2(b) and thus containing nuclear material subject to safeguards under this Agreement; and
 - (ii) Specify in detail, to the extent necessary to permit the Agency to fulfil its responsibilities under this Agreement in an effective and efficient manner, how the procedures laid down in this Agreement are to be applied.
- (b) The Agency shall also notify China of those facilities to be removed from the Listing which have not otherwise been removed pursuant to notification by China in accordance with Article 34. Such facility or facilities shall be removed from the Listing upon such notification to China.
- (c) The Subsidiary Arrangements may be extended or changed by agreement between the Agency and China without amendment to this Agreement.

Article 40

(a) The Subsidiary Arrangements shall enter into force as soon as possible after entry into force of this Agreement.

(b) China and the Agency shall make every effort to achieve the entry into force of the Subsidiary Arrangements in respect of facilities selected in accordance with Article 2(b) within ninety days of the selection of the facility in question by the Agency. An extension of that period shall require agreement between China and the Agency.

(c) Upon selection of a facility by the Agency in accordance with Article 2(b), China shall provide the Agency promptly with the information required for completing the Subsidiary Arrangements, and the Agency shall have the right to apply the procedures set forth in this Agreement to the nuclear material listed in the inventory provided for in Article 41, even if the Subsidiary Arrangements have not yet entered into force.

INVENTORY

Article 41

The Agency shall establish, on the basis of the initial reports referred to in Article 60, a unified inventory of all nuclear material subject to safeguards under this Agreement, irrespective of its origin, and shall maintain this inventory on the basis of subsequent reports and of the results of its verification activities. Copies of the inventory shall be made available to China at intervals to be agreed.

DESIGN INFORMATION

*General provisions**Article 42*

The time limits for the provision of design information in respect of any facility selected in accordance with Article 2(b) shall be specified in the Subsidiary Arrangements and such information shall be provided as early as possible after such selection.

Article 43

The design information to be provided to the Agency shall include, in respect of each facility selected in accordance with Article 2(b), when applicable:

- (a) The identification of the facility, stating its general character, purpose, nominal capacity and geographic location, and the name and address to be used for routine business purposes;
- (b) A description of the general arrangement of the facility with reference, to the extent feasible, to the form, location and flow of nuclear material and to the general layout of important items of equipment which use, produce or process nuclear material;
- (c) A description of features of the facility relating to material accountancy, containment and surveillance; and
- (d) A description of the existing and proposed procedures at the facility for nuclear material accountancy and control, with special reference to material balance areas established by the operator, measurements of flow and procedures for physical inventory taking.

Article 44

Other information relevant to the application of safeguards shall also be provided to the Agency in respect of each facility selected in accordance with Article 2(b), in particular on organizational responsibilities for material accountancy and control. China shall provide the Agency with supplementary information on the health and safety procedures which the Agency shall observe and with which the inspectors shall comply at the facility.

Article 45

The Agency shall be provided with design information in respect of a modification relevant for safeguards purposes, for examination, and shall be informed of any

change in the information provided to it under Article 44, sufficiently in advance for the safeguards procedures to be adjusted when necessary.

Purposes of Examination of Design Information

Article 46

The design information provided to the Agency shall be used for the following purposes:

- (a) To identify the features of facilities and nuclear material relevant to the application of safeguards to nuclear material in sufficient detail to facilitate verification;
- (b) To determine material balance areas to be used for Agency accounting purposes and to select those strategic points which are key measurement points and which will be used to determine flow and inventory of nuclear material; in determining such material balance areas the Agency shall, *inter alia*, use the following criteria:
 - (i) The size of the material balance area shall be related to the accuracy with which the material balance can be established;
 - (ii) In determining the material balance area advantage shall be taken of any opportunity to use containment and surveillance to help ensure the completeness of flow measurements and thereby to simplify the application of safeguards and to concentrate measurement efforts at key measurement points;
 - (iii) A number of material balance areas in use at a facility or at distinct sites may be combined in one material balance area to be used for Agency accounting purposes when the Agency determines that this is consistent with its verification requirements; and
 - (iv) A special material balance area may be established at the request of China around a process step involving commercially sensitive information;
- (c) To establish the nominal timing and procedures for taking of physical inventory of nuclear material for Agency accounting purposes;
- (d) To establish the records and reports requirements and records evaluation procedures;
- (e) To establish requirements and procedures for verification of the quantity and location of nuclear material; and
- (f) To select appropriate combinations of containment and surveillance methods and techniques and the strategic points at which they are to be applied.

The results of the examination of the design information shall be included in the Subsidiary Arrangements.

Re-examination of Design Information

Article 47

Design information shall be re-examined in the light of changes in operating conditions, of developments in safeguards technology and of experience in the application of verification procedures, with a view to modifying the action the Agency has taken pursuant to Article 46.

*Verification of Design Information**Article 48*

The Agency, in co-operation with China, may send inspectors to facilities to verify the design information provided to the Agency pursuant to Articles 42 through 45, for the purposes stated in Article 46.

RECORDS SYSTEM

*General Provisions**Article 49*

In establishing a system of nuclear material accounting and control as referred to in Article 7, China shall arrange that records are kept in respect of each material balance area. The record to be kept shall be described in the Subsidiary Arrangements.

Article 50

China shall make arrangements to facilitate the examination of records referred to in Article 49 by inspectors.

Article 51

Records referred to in Article 49 shall be retained for at least five years.

Article 52

Records referred to in Article 49 shall consist, as appropriate, of:

- (a) Accounting records of all nuclear material subject to safeguards under this Agreement; and
- (b) Operating records for facilities containing such nuclear material.

Article 53

The system of measurements on which the records used for the preparation of reports are based shall either conform to the latest international standards or be equivalent in quality to such standards.

*Accounting Records**Article 54*

The accounting records shall set forth the following in respect of each material balance area:

- (a) All inventory changes, so as to permit a determination of the book inventory at any time;
- (b) All measurement results that are used for determination of the physical inventory; and
- (c) All adjustments and corrections that have been made in respect of inventory changes, book inventories and physical inventories.

Article 55

For all inventory changes and physical inventories the accounting records shall show, in respect of each batch of nuclear material: material identification, batch data and source data. The records shall account for uranium, thorium and plutonium separately in each batch of nuclear material. For each inventory change, the date of the inventory change and, when appropriate, the originating material balance area and the receiving material balance area or the recipient, shall be indicated.

Operating Records

Article 56

The operating records shall set forth, as appropriate, in respect of each material balance area:

- (a) Those operating data which are used to establish changes in the quantities and composition of nuclear material;
- (b) The data obtained from the calibration of tanks and instruments and from sampling and analyses, the procedures to control the quality of measurements and the derived estimates of random and systematic error;
- (c) A description of the sequence of the actions taken in preparing for, and in taking, a physical inventory, in order to ensure that it is correct and complete; and
- (d) A description of the actions taken in order to ascertain the cause and magnitude of any accidental or unmeasured loss that might occur.

REPORTS SYSTEM

General Provisions

Article 57

China shall provide the Agency with reports as detailed in Articles 58 through 67 in respect of nuclear material in facilities selected in accordance with Article 2(b)

Article 58

Reports shall be made in Chinese.

Article 59

Reports shall be based on the records kept in accordance with Articles 49 through 56 and shall consist, as appropriate, of accounting reports and special reports.

Accounting Reports

Article 60

China shall provide the Agency with an initial report on all nuclear material contained in each facility selected in accordance with Article 2(b). Such reports shall be dispatched to the Agency within thirty days of the last day of the calendar month in which the Agency selects the facility, and shall reflect the situation as of the last day of that month.

Article 61

China shall provide the Agency with the following accounting reports for each material balance area:

- (a) Inventory change reports showing all changes in the inventory of nuclear material. The reports shall be dispatched as soon as possible and in any event within thirty days after the end of the month in which the inventory changes occurred or were established; and
- (b) Material balance reports showing the material balance based on a physical inventory of nuclear material actually present in the material balance area. The reports shall be dispatched as soon as possible and in any event within thirty days after the physical inventory has been taken.

The reports shall be based on data available as of the date of reporting and may be corrected at a later date, as required.

Article 62

Inventory change reports shall specify identification and batch data for each batch of nuclear material, the date of the inventory change and, as appropriate, the originating material balance area and the receiving material balance area or the recipient. These reports shall be accompanied by concise notes:

- (a) Explaining the inventory changes, on the basis of the operating data contained in the operating records provided for under Article 56(a); and
- (b) Describing, as specified in the Subsidiary Arrangements, the anticipated operational programme, particularly the taking of a physical inventory.

Article 63

China shall report each inventory change, adjustment and correction, either periodically in a consolidated list or individually. Inventory changes shall be reported in terms of batches. As specified in the Subsidiary Arrangements, small changes in inventory of nuclear material, such as transfers of analytical samples, may be combined in one batch and reported as one inventory change.

Article 64

The Agency shall provide China with semi-annual statements of book inventory of nuclear material subject to safeguards under this Agreement, for each material balance area, as based on the inventory change reports for the period covered by each such statement.

Article 65

Material balance reports shall include the following entries, unless otherwise agreed by China and the Agency:

- (a) Beginning physical inventory;
- (b) Inventory changes (first increases, then decreases);
- (c) Ending book inventory;
- (d) Shipper/receiver differences;
- (e) Adjusted ending book inventory;

- (f) Ending physical inventory; and
- (g) Material unaccounted for.

A statement of the physical inventory, listing all batches separately and specifying material identification and batch data for each batch, shall be attached to each material balance report.

Special Reports

Article 66

China shall make special reports without delay:

- (a) If any unusual incident or circumstances lead China to believe that there is or may have been loss of nuclear material that exceeds the limits specified for this purpose in the Subsidiary Arrangements; or
- (b) If the containment has unexpectedly changed from that specified in the Subsidiary Arrangements to the extent that unauthorized removal of nuclear material has become possible.

Amplification and Clarification of Reports

Article 67

If the Agency so requests, China shall provide the Agency with amplifications or clarification of any report in so far as relevant for the purpose of safeguards.

INSPECTIONS

General Provisions

Article 68

The Agency shall have the right to make inspections as provided for in Articles 69 through 82.

Purposes of Inspections

Article 69

The Agency may make *ad hoc* inspections in order to:

- (a) Verify the information contained in the initial reports;
- (b) Identify and verify changes in the situation which have occurred since the date of the relevant initial report; and
- (c) Identify and if possible verify the quantity and composition of the nuclear material subject to safeguards under this Agreement in respect of which the information referred to in Article 89 (a) has been provided to the Agency.

Article 70

The Agency may make routine inspections in order to:

- (a) Verify that reports are consistent with records;
- (b) Verify the location, identity, quantity and composition of all nuclear material subject to safeguards under this Agreement; and

- (c) Verify information on the possible causes of material unaccounted for, shipper/receiver differences and uncertainties in the book inventory.

Article 71

Subject to the procedures laid down in Article 75, the Agency may make special inspections:

- (a) In order to verify the information contained in special reports; or
(b) If the Agency considers that information made available by China, including explanations from China and information obtained from routine inspections, is not adequate for the Agency to fulfil its responsibilities under this Agreement.

An inspection shall be deemed to be special when it is either additional to the routine inspection effort provided for in Articles 76 through 80 or involves access to information or locations in addition to the access specified in Article 74 for *ad hoc* and routine inspections, or both.

Scope of Inspections

Article 72

For the purposes specified in Articles 69 through 71, the Agency may:

- (a) Examine the records kept pursuant to Articles 49 through 56;
(b) Make independent measurements of all nuclear material subject to safeguards under this Agreement;
(c) Verify the functioning and calibration of instruments and other measuring and control equipment;
(d) Apply and make use of surveillance and containment measures; and
(e) Use other objective methods which have been demonstrated to be technically feasible.

Article 73

Within the scope of Article 72, the Agency shall be enabled:

- (a) To observe that samples at key measurement points for material balance accountancy are taken in accordance with procedures which produce representative samples, to observe the treatment and analysis of the samples and to obtain duplicates of such samples;
(b) To observe that the measurements of nuclear material at key measurement points for material balance accountancy are representative, and to observe the calibration of the instruments and equipment involved;
(c) To make arrangements with China that, if necessary:
(i) Additional measurements are made and additional samples taken for the Agency's use;
(ii) The Agency's standard analytical samples are analysed;
(iii) Appropriate absolute standards are used in calibrating instruments and other equipment; and
(iv) Other calibrations are carried out;

- (d) To arrange to use its own equipment for independent measurement and surveillance, and if so agreed and specified in the Subsidiary Arrangements, to arrange to install such equipment;
- (e) To apply its seals and other identifying and tamper-indicating devices to containments, if so agreed and specified in the Subsidiary Arrangements; and
- (f) To make arrangements with China for the shipping of samples taken for the Agency's use.

Access for Inspections

Article 74

(a) For the purposes specified in Article 69(a) and (b) and until such time as the strategic points have been specified in the Subsidiary Arrangements, the Agency inspectors shall have access to any location where the initial report or any inspections carried out in connection with it indicate that nuclear material subject to safeguards under this Agreement is present.

(b) For the purpose specified in Article 69(c), the inspectors shall have access to any facility selected in accordance with Article 2(b) in which nuclear material referred to in Article 69(c) is located.

(c) For the purposes specified in Article 70 the inspectors shall have access only to the strategic points specified in the Subsidiary Arrangements and to the records maintained pursuant to Articles 49 through 56.

(d) In the event of China concluding that any unusual circumstances require extended limitations on access by the Agency, China and the Agency shall promptly make arrangements with a view to enabling the Agency to discharge its safeguards responsibilities in the light of these limitations. The Director General shall report each such arrangement to the Board.

Article 75

In circumstances which may lead to special inspections for the purposes specified in Article 71 China and the Agency shall consult forthwith. As a result of such consultations the Agency may:

- (a) Make inspections in addition to the routine inspection effort provided for in Articles 76 through 80; and
- (b) Obtain access, in agreement with China, to information or locations in addition to those specified in Article 74. Any disagreement concerning the need for additional access shall be resolved in accordance with Articles 20 and 21; in case action by China is essential and urgent, Article 17 shall apply.

Frequency and Intensity of Routine Inspections

Article 76

The Agency shall keep the number, intensity and duration of routine inspections, applying optimum timing, to the minimum consistent with the effective implementation of the safeguards procedures set forth in this Agreement, and shall make the optimum and most economical use of inspection resources available to it.

Article 77

The Agency may carry out one routine inspection per year in respect of facilities contained in the Listing made pursuant to Article 39 with a content or annual throughput, whichever is greater, of nuclear material not exceeding five effective kilograms.

Article 78

The number, intensity, duration, timing and mode of routine inspections in respect of facilities contained in the Listing made pursuant to Article 39 with a content or annual throughput of nuclear material exceeding five effective kilograms shall be determined on the basis that in the maximum or limiting case the inspection regime shall be no more intensive than is necessary and sufficient to maintain continuity of knowledge of the flow and inventory of nuclear material, and the maximum routine inspection effort in respect of such facilities shall be determined as follows:

- (a) For reactors and sealed storage installations the maximum total of routine inspection per year shall be determined by allowing one sixth of a man-year of inspection for each such facility;
- (b) For facilities, other than reactors or sealed storage installations, involving plutonium or uranium enriched to more than 5%, the maximum total of routine inspection per year shall be determined by allowing for each such facility $30 \times \sqrt{E}$ man-days of inspection per year, where E is the inventory or annual throughput of nuclear material, whichever is greater, expressed in effective kilograms. The maximum established for any such facility shall not, however, be less than 1.5 man-years of inspection; and
- (c) For facilities not covered by paragraphs (a) or (b) of this Article, the maximum total of routine inspection per year shall be determined by allowing for each such facility one third of a man-year of inspection plus $0.4 \times E$ man-days of inspection per year, where E is the inventory or annual throughput of nuclear material, whichever is greater, expressed in effective kilograms.

China and the Agency may agree to amend the figures for the maximum inspection effort specified in this Article, upon determination by the Board that such amendment is reasonable.

Article 79

Subject to Articles 76 through 78 the criteria to be used for determining the actual number, intensity, duration, timing and mode of routine inspections in respect of any facility contained in the Listing made pursuant to Article 39 shall include:

- (a) The form of the nuclear material, in particular, whether the nuclear material is in bulk form or contained in a number of separate items; its chemical composition and, in the case of uranium, whether it is of low or high enrichment; and its accessibility;
- (b) The effectiveness of China's accounting and control system, including the extent to which the operators of facilities are functionally independent of China's accounting and control system; the extent to which the measures specified in Article 32 have been implemented by China; the promptness of reports provided to the Agency; their consistency with the Agency's independent verification;

and the amount and accuracy of the material unaccounted for, as verified by the Agency;

- (c) Characteristics of that part of China's nuclear fuel cycle in which safeguards are applied under this Agreement, in particular, the number and types of facilities, the characteristics of such facilities relevant to safeguards, notably the degree of containment; the extent to which the design of such facilities facilitates verification of the flow and inventory of nuclear material; and the extent to which information from different material balance areas can be correlated;
- (d) International interdependence, in particular, the extent to which nuclear material is received from or sent to other States for use or processing; any verification activities by the Agency in connection therewith; and the extent to which China's nuclear activities are interrelated with those of other States; and
- (e) Technical developments in the field of safeguards, including the use of statistical techniques and random sampling in evaluating the flow of nuclear material.

Article 80

China and the Agency shall consult if China considers that the inspection effort is being deployed with undue concentration on particular facilities.

Notice of Inspections

Article 81

The Agency shall give advance notice to China before arrival of inspectors at facilities contained in the Listing made pursuant to Article 39 as follows:

- (a) For *ad hoc* inspections pursuant to Article 69 (c), at least 24 hours; for those pursuant to Article 69(a) and (b) as well as the activities provided for in Article 48, at least one week;
- (b) For special inspections pursuant to Article 71, as promptly as possible after China and the Agency have consulted as provided for in Article 75, it being understood that notification of arrival normally will constitute part of the consultations; and
- (c) For routine inspections pursuant to Article 70, at least 24 hours in respect of the facilities referred to in Article 78(b) and sealed storage installations containing plutonium or uranium enriched to more than 5%, and one week in all other cases.

Such notice of inspections shall include the names of the inspectors and shall indicate the facilities to be visited and the periods during which they will be visited. If the inspectors are to arrive from outside China the Agency shall also give advance notice of the place and time of their arrival in China.

Article 82

Notwithstanding the provisions of Article 81, the Agency may, as a supplementary measure, carry out without advance notification a portion of the routine inspections pursuant to Article 78 in accordance with the principle of random sampling. In performing any unannounced inspections, the Agency shall fully take into account any operational programme provided by China pursuant to Article 62(b). Moreover, whenever practicable, and on the basis of the operational programme, it shall advise

China periodically of its general programme of announced and unannounced inspections, specifying the general periods when inspections are foreseen. In carrying out any unannounced inspections, the Agency shall make every effort to minimize any practical difficulties for China and for facility operators, bearing in mind the relevant provisions of Articles 44 and 87. Similarly China shall make every effort to facilitate discharge by Agency inspectors of their functions under this Agreement.

Designation of Inspectors

Article 83

The following procedures shall apply to the designation of inspectors:

- (a) The Director General shall inform China in writing of the name, qualifications, nationality, grade and such other particulars as may be relevant, of each Agency official he proposes for designation as an inspector for China;
- (b) China shall inform the Director General within thirty days of the receipt of such a proposal whether it accepts the proposal;
- (c) The Director General may designate each official who has been accepted by China as one of the inspectors for China, and shall inform China of such designations; and
- (d) The Director General, acting in response to a request by China or on his own initiative, shall immediately inform China of the withdrawal of the designation of any official as an inspector for China.

However, in respect of inspectors needed for the activities provided for in Article 48 and to carry out *ad hoc* inspections pursuant to Article 69(a) and (b) the designation procedures shall be completed if possible within thirty days after the entry into force of this Agreement. If such designation appears impossible within this time limit, inspectors for such purposes shall be designated on a temporary basis.

Article 84

China shall grant or renew as quickly as possible appropriate visas, where required, for each inspector designated for China.

Conduct and Visits of Inspectors

Article 85

Inspectors, in exercising their functions under Articles 48 and 69 through 73, shall carry out their activities in a manner designed to avoid hampering or delaying the construction, commissioning or operation of facilities, or affecting their safety. In particular inspectors shall not operate any facility themselves or direct the staff of a facility to carry out any operation. If inspectors consider that in pursuance of Articles 72 and 73, particular operations in a facility should be carried out by the operator, they shall make a request therefor.

Article 86

When inspectors require services available in China, including the use of equipment, in connection with the performance of inspections, China shall facilitate the procurement of such services and the use of such equipment by inspectors.

Article 87

China shall have the right to have inspectors accompanied during their inspections by representatives of China, provided that inspectors shall not thereby be delayed or otherwise impeded in the exercise of their functions.

STATEMENTS ON THE AGENCY VERIFICATION ACTIVITIES

Article 88

The Agency shall inform China of:

- (a) The results of inspections, at intervals to be specified in the Subsidiary Arrangements; and
- (b) The conclusions it has drawn from its verification activities in China, in particular by means of statements in respect of each material balance area, which shall be made as soon as a possible after a physical inventory has been taken and verified by the Agency and a material balance has been struck.

INTERNATIONAL TRANSFERS

Article 89

(a) China shall provide the Agency with the following information on international transfers of nuclear material from or to a facility selected in accordance with Article 2(b):

(i) With respect to the anticipated export of nuclear material (excluding exports of source material for non-nuclear purposes), in an amount exceeding one effective kilogram, for peaceful purposes to any non-nuclear-weapon State:

- (1) The organization or company which will prepare the nuclear material for export;
- (2) The description, and if possible the expected composition and quantity, of nuclear material in the anticipated export;
- (3) The State and organization or company to which the nuclear material is to be exported and, where applicable (i.e. in those cases in which nuclear material is processed further in a second State before retransfer to a third State), the State and organization or company of ultimate destination.

The foregoing information will be provided normally at least ten days prior to export of the material from China; confirmation of each export, including actual quantity and composition and date of shipment, will be provided promptly after shipment by China.

(ii) With respect to each import, in an amount greater than one effective kilogram, of nuclear material which, immediately prior to export, is subject to safeguards, under an agreement with the Agency, in the State from which the material is imported:

- (1) The State and organization or company from which the nuclear material is received;
- (2) The description, composition and quantity of nuclear material in the shipment.

The information described above will be provided as soon as possible after receipt of the material.

(b) Where information has been provided to the Agency in accordance with paragraph (a) of this Article, China shall make a Special Report as envisaged in Article 66, if any unusual circumstances lead China to believe that there is or may have been loss of nuclear material or the occurrence of significant delay during the transfer.

DEFINITIONS

Article 90

For the purposes of this Agreement:

A. *Adjustment* means an entry into an accounting record or a report showing a shipper/receiver difference or material unaccounted for.

B. *Annual throughput* means, for the purposes of Articles 77 and 78, the amount of nuclear material transferred annually out of a facility working at nominal capacity.

C. *Batch* means a portion of nuclear material handled as a unit for accounting purposes at a key measurement point and for which the composition and quantity are defined by a single set of specifications or measurements. The nuclear material may be in bulk form or contained in a number of separate items.

D. *Batch data* means the total weight of each element of nuclear material and, in the case of plutonium and uranium, the isotopic composition when appropriate. The units of account shall be as follows:

- (a) Grams of contained plutonium;
- (b) Grams of total uranium and grams of contained uranium-235 plus uranium-233 for uranium enriched in these isotopes; and
- (c) Kilograms of contained thorium, natural uranium or depleted uranium.

For reporting purposes the weights of individual items in the batch shall be added together before rounding to the nearest unit.

E. *Book inventory* of a material balance area means the algebraic sum of the most recent physical inventory of that material balance area and of all inventory changes that have occurred since that physical inventory was taken.

F. *Correction* means an entry into an accounting record or a report to rectify an identified mistake or to reflect an improved measurement of a quantity previously entered into the record or report. Each correction must identify the entry to which it pertains.

G. *Effective kilogram* means a special unit used in safeguarding nuclear material. The quantity in effective kilograms is obtained by taking:

- (a) For plutonium, its weight in kilograms;
- (b) For uranium with an enrichment of 0.01 (1%) and above, its weight in kilograms multiplied by the square of its enrichment;
- (c) For uranium with an enrichment below 0.01 (1%) and above 0.005 (0.5%), its weight in kilograms multiplied by 0.0001; and
- (d) For depleted uranium with an enrichment of 0.005 (0.5%) or below, and for thorium, its weight in kilograms multiplied by 0.00005.

H. *Enrichment* means the ratio of the combined weight of the isotopes uranium-233 and uranium-235 to that of the total uranium in question.

I. *Facility* means:

- (a) A reactor, a critical facility, a conversion plant, a fabrication plant, a reprocessing plant, an isotope separation plant or a separate storage installation; or
- (b) Any location where nuclear material in amounts greater than one effective kilogram is customarily used.

J. *Inventory change* means an increase or decrease, in terms of batches, of nuclear material in a material balance area; such a change shall involve one of the following:

(a) Increases:

- (i) Import;
- (ii) Domestic receipt: receipts from other material balance areas, receipts from a non-safeguarded activity or receipts at the starting point of safeguards;
- (iii) Nuclear production: production of special fissionable material in a reactor; and
- (iv) De-exemption: re-application of safeguards on nuclear material previously exempted therefrom on account of its use or quantity.

(b) Decreases:

- (i) Export;
- (ii) Domestic shipment: shipments to other material balance areas or shipments for a non-safeguarded activity;
- (iii) Nuclear loss: loss of nuclear material due to its transformation into other element(s) or isotope(s) as a result of nuclear reactions;
- (iv) Measured discard: nuclear material which has been measured, or estimated on the basis of measurements, and disposed of in such a way that it is not suitable for further nuclear use;
- (v) Retained waste: nuclear material generated from processing or from an operational accident, which is deemed to be unrecoverable for the time being but which is stored;
- (vi) Exemption: exemption of nuclear material from safeguards on account of its use or quantity; and
- (vii) Other loss: for example, accidental loss (that is, irretrievable and inadvertent loss of nuclear material as the result of an operational accident) or theft.

K. *Key measurement point* means a location where nuclear material appears in such a form that it may be measured to determine material flow or inventory. Key measurement points thus include, but are not limited to, the inputs and outputs (including measured discards) and storages in material balance areas.

L. *Man-year of inspection* means, for the purposes of Article 78, 300 man-days of inspection, a man-day being a day during which a single inspector has access to a facility at any time for a total of not more than eight hours.

M. *Material balance area* means an area in or outside of a facility such that:

- (a) The quantity of nuclear material in each transfer into or out of each material balance area can be determined; and
 - (b) The physical inventory of nuclear material in each material balance area can be determined when necessary, in accordance with specified procedures,
- in order that the material balance for Agency safeguards purposes can be established.

N. *Material unaccounted for* means the difference between book inventory and physical inventory.

O. *Nuclear material* means any source or any special fissionable material as defined in Article XX of the Statute. The term source material shall not be interpreted as applying to ore or ore residue. Any determination by the Board under Article XX of the Statute after the entry into force of this Agreement which adds to the materials considered to be source material or special fissionable material shall have effect under this Agreement only upon acceptance by China.

P. *Physical inventory* means the sum of all the measured or derived estimates of batch quantities of nuclear material on hand at a given time within a material balance area, obtained in accordance with specified procedures.

Q. *Shipper/receiver difference* means the difference between the quantity of nuclear material in a batch as stated by the shipping material balance area and as measured at the receiving material balance area.

R. *Source data* means those data, recorded during measurement or calibration or used to derive empirical relationships, which identify nuclear material and provide batch data. Source data may include, for example, weight of compounds, conversion factors to determine weight of element, specific gravity, element concentration, isotopic ratios, relationship between volume and manometer readings and relationship between plutonium produced and power generated.

S. *Strategic point* means a location selected during examination of design information where, under normal conditions and when combined with the information from all strategic points taken together, the information necessary and sufficient for the implementation of safeguards measures is obtained and verified; a strategic point may include any location where key measurements related to material balance accountability are made and where containment and surveillance measures are executed.

DONE in Vienna on 20 September 1988 in duplicate in the Chinese language.

For the People's Republic
of China:

ZHOU PING

For the International Atomic
Energy Agency:

HANS BLIX