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THE TEXT OF THE AGREEMENT OF 4 MARCH 1977 BETWEEN JAPAN AND THE
INTERNATIONAL ATOMIC ENERGY AGENCY IN IMPLEMENTATION OF
ARTICLE III.1 AND 4 OF THE TREATY ON THE
NON-PROLIFERATION OF NUCLEAR WEAPONS

1. The text[1] of the Agreement of 4 March 1977, and of the Protocol which is an integral part thereof, between Japan and the Agency in implementation of Article III.1 and 4 of the Treaty on the Non-Proliferation of Nuclear Weapons[2] is reproduced for the information of all Members.
2. The Agreement entered into force, pursuant to Article 25, on 2 December 1977.

[1] The footnotes to the text have been added in the present information circular.

[2] Reproduced in document INFCIRC/140.

AGREEMENT BETWEEN THE GOVERNMENT OF JAPAN AND THE INTERNATIONAL
ATOMIC ENERGY AGENCY IN IMPLEMENTATION OF ARTICLE III, 1 AND 4
OF THE TREATY ON THE NON-PROLIFERATION OF NUCLEAR WEAPONS

WHEREAS Japan is a signatory of the Treaty on the Non-Proliferation of Nuclear Weapons (hereinafter referred to as "the Treaty" [2]) opened for signature at London, Moscow and Washington on 1 July 1968 and which entered into force on 5 March 1970;

WHEREAS Article IV.1 of the Treaty provides that nothing in the Treaty shall be interpreted as affecting the inalienable right of all the Parties to the Treaty to develop research, production and use of nuclear energy for peaceful purposes without discrimination and in conformity with Articles I and II of the Treaty;

WHEREAS Article IV.2 of the Treaty provides that all the Parties to the Treaty under-take to facilitate, and have the right to participate in, the fullest possible exchange of equipment, materials and scientific and technological information for the peaceful uses of nuclear energy;

WHEREAS Article IV.2 of the Treaty also provides that the Parties to the Treaty in a position to do so shall also co-operate in contributing alone or together with other States or international organizations to the further development of the applications of nuclear energy for peaceful purposes, especially in the territories of non-nuclear-weapon States Party to the Treaty;

WHEREAS Article III.1 of the Treaty provides that each non-nuclear-weapon State Party to the Treaty undertakes to accept safeguards, as set forth in an agreement to be negotiated and concluded with the International Atomic Energy Agency (hereinafter referred to as "the Agency") in accordance with the Statute of the Agency (hereinafter referred to as the Statute) and the Agency's safeguards system, for the exclusive purpose of verification of the fulfilment of its obligations assumed under this Treaty with a view to preventing diversion of nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices;

WHEREAS Article III.4 provides that non-nuclear-weapon States Party to the Treaty shall conclude agreements with the Agency to meet the requirements of the said Article either individually or together with other States in accordance with the Statute;

WHEREAS the Agency is authorized under Article III. A-5 of the Statute, to apply safeguards, at the request of the parties, to any bilateral or multilateral arrangement, or, at the request of a State, to any of that State's activities in the field of atomic energy;

WHEREAS the Government of Japan is prepared to carry out, through Japan's national system including inspections, necessary controls on all nuclear activities, including, inter alia, fabrication, reprocessing, and establishing and operating reactors;

WHEREAS this system includes examination of design information, maintenance of records and submission of reports to permit nuclear material accounting for Japan, inspection by Japan's inspectors and a system of sanctions;

WHEREAS it is the desire of the Government of Japan and the Agency to avoid unnecessary duplication of their activities;

NOW, THEREFORE, the Government of Japan and the Agency have agreed as follows:

PART I

BASIC UNDERTAKING

Article 1

The Government of Japan undertakes, pursuant to Article III.1 of the Treaty, to accept safeguards, in accordance with the terms of this Agreement, on all source or special fissionable material in all peaceful nuclear activities within the territory of Japan, under its jurisdiction or carried out under its control anywhere, for the exclusive purpose of verifying that such material is not diverted to nuclear weapons or other nuclear explosive devices.

APPLICATION OF SAFEGUARDS

Article 2

The Agency shall have the right and the obligation to ensure that safeguards will be applied, in accordance with the terms of this Agreement, on all source or special fissionable material in all peaceful nuclear activities within the territory of Japan, under its jurisdiction or carried out under its control anywhere, for the exclusive purpose of verifying that such material is not diverted to nuclear weapons or other nuclear explosive devices.

Article 3

- (a) The Government of Japan shall maintain a system of accounting for and control of all nuclear material subject to safeguards under this Agreement (including independent verification of such material), which the Government of Japan may designate as "the National System of Safeguards" (hereinafter referred to as "the National System").
- (b) The Government of Japan undertakes, in applying the National System on source and special fissionable material in all peaceful nuclear activities within the territory of Japan, to co-operate with the Agency, in accordance with the terms of this Agreement, with a view to ascertaining that such source and special fissionable material is not diverted to nuclear weapons or other nuclear explosive devices.
- (c) The Agency shall apply its safeguards, in accordance with the terms of this Agreement, in such a manner as to enable it to verify, in ascertaining that there has been no diversion of nuclear material from peaceful uses to nuclear weapons or other nuclear explosive devices, findings of the National System. The Agency's verification shall include, inter alia, independent measurements and observations conducted by the Agency in accordance with the procedures specified in this Agreement. The Agency, in its verification, shall take due account of the technical effectiveness of the National System.

CO-OPERATION BETWEEN THE GOVERNMENT OF JAPAN
AND THE AGENCY

Article 4

The Government of Japan and the Agency shall co-operate to facilitate the implementation of the safeguards provided for in this Agreement and shall avoid unnecessary duplication of their activities.

IMPLEMENTATION OF SAFEGUARDS

Article 5

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

- (a) To avoid hampering the economic and technological development in Japan or international co-operation in the field of peaceful nuclear activities, including international exchange of nuclear material;
- (b) To avoid undue interference in Japan'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 6

- (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 the Government of Japan agrees thereto.

Article 7

- (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.

PROVISION OF INFORMATION TO THE AGENCY

Article 8

- (a) In order to ensure the effective implementation of safeguards under this Agreement, the Government of Japan shall, in accordance with the provisions set out in this Agreement, 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) If the Government of Japan so requests, the Agency shall be prepared to examine on premises of Japan design information which the Government of Japan 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 Japan.

AGENCY INSPECTORS

Article 9

- (a)
 - (i) The Agency shall secure the consent of the Government of Japan to the designation of Agency inspectors to Japan.
 - (ii) If the Government of Japan, 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 the Government of Japan an alternative designation or designations.
 - (iii) If, as a result of the repeated refusal of the Government of Japan 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) The Government of Japan shall take the necessary steps to ensure that Agency inspectors can effectively discharge 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 Japan and to the peaceful nuclear activities inspected; and
 - (ii) To ensure protection of industrial secrets or any other confidential information coming to the knowledge of Agency inspectors.

PRIVILEGES AND IMMUNITIES

Article 10

The Government of Japan 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 Agency.[3]

[3] INFCIRC/9/Rev.2.

CONSUMPTION OR DILUTION OF NUCLEAR MATERIAL

Article 11

Safeguards under this Agreement shall terminate on nuclear material 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 safe-guards, or has become practically irrecoverable.

TRANSFER OF NUCLEAR MATERIAL OUT OF JAPAN

Article 12

The Government of Japan shall give the Agency notification of transfers of nuclear material subject to safeguards under this Agreement out of Japan, in accordance with the provisions set out in this Agreement. The Agency shall terminate safeguards on nuclear material under this Agreement when the recipient State has assumed responsibility therefor, as provided for in this Agreement. The Agency shall maintain records indicating each transfer and, where applicable, the re-application of safeguards to the transferred nuclear material.

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, the Government of Japan shall agree with the Agency, before the material is so used, on the circumstances under which the safeguards under this Agreement on such material may be terminated.

NON-APPLICATION OF SAFEGUARDS

Article 14

If the Government of Japan intends to exercise its discretion to use nuclear material which is required to be safeguarded under this Agreement in a nuclear activity which does not require the application of safeguards under this Agreement, the following procedures shall apply:

- (a) The Government of Japan shall inform the Agency of the activity and shall make it clear:
 - (i) That the use of the nuclear material in such an activity will not be in conflict with an undertaking the Government of Japan may have given and in respect of which Agency safeguards apply, that the material will be used only in a peaceful nuclear activity; and
 - (ii) That during the period of non-application of safeguards under this Agreement the nuclear material will not be used for the production of nuclear weapons or other nuclear explosive devices;
- (b) The Government of Japan and the Agency shall make an arrangement so that, only while the nuclear material is in such an activity, the safeguards provided for in this Agreement will not be applied. The arrangement shall identify, to the extent possible, the period or circumstances during which safeguards will not be applied. In any event, the safeguards provided for in this Agreement shall apply again as

soon as the nuclear material ceases to be used in such an activity. The Agency shall be kept informed of the total quantity and composition of such material in Japan and of any export of such material; and

- (c) Each arrangement shall be made in agreement with the Agency. Such agreement shall be given as promptly as possible and shall relate only to such matters as, inter alia, temporal and procedural provisions and reporting arrangements, but shall not involve any approval or classified knowledge of the activity which does not require the application of safeguards under this Agreement, or relate to the use of the nuclear material therein.

FINANCE

Article 15

The Government of Japan and the Agency will each bear its own expenses incurred in implementing its respective responsibilities under this Agreement. However, if the Government of Japan 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 Agency inspectors may request.

THIRD PARTY LIABILITY FOR NUCLEAR DAMAGE

Article 16

The Government of Japan 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 the Japanese 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 Japan.

INTERNATIONAL RESPONSIBILITY

Article 17

Any claim by the Government of Japan against the Agency or by the Agency against the Government of Japan 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 IN RELATION TO VERIFICATION OF NON-DIVERSION

Article 18

If the Board, upon report of the Director General, decides that an action by the Government of Japan is essential and urgent in order to ensure verification that nuclear material subject to safeguards under this Agreement is not diverted to nuclear weapons or other nuclear explosive devices, the Board may call upon the Government of Japan to take the required action without delay, irrespective of whether procedures have been invoked pursuant to Article 22 of this Agreement for the settlement of a dispute.

Article 19

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 there has been no diversion of nuclear material required to be safeguarded under this Agreement, to nuclear weapons or other nuclear explosive devices, it may make the reports provided for in Article XII. C 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 the Government of Japan every reasonable opportunity to furnish the Board with any necessary reassurance.

INTERPRETATION AND APPLICATION OF THIS AGREEMENT AND SETTLEMENT OF DISPUTES

Article 20

The Government of Japan and the Agency shall, at the request of either, consult about any question arising out of the interpretation or application of this Agreement.

Article 21

The Government of Japan 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 the Government of Japan to participate in the discussion of any such question by the Board.

Article 22

Any dispute arising out of the interpretation or application of this Agreement, except a dispute with regard to a finding by the Board under Article 19 or an action taken by the Board pursuant to such a finding, which is not settled by negotiation or another procedure agreed to by the Government of Japan and the Agency shall, at the request of either, be submitted to an arbitral tribunal composed as follows: the Government of Japan and the Agency shall each designate one arbitrator, and the two arbitrators so designated shall elect a third, who shall be the Chairman. If, within thirty days of the request for arbitration, either the Government of Japan or the Agency has not designated an arbitrator, either the Government of Japan or the Agency may request the President of the International Court of Justice to appoint an arbitrator. The same procedure shall apply if, within thirty days of the designation or appointment of the second arbitrator, the third arbitrator has not been elected. 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 tribunal. The decisions of the tribunal shall be binding on the Government of Japan and the Agency.

SUSPENSION OF APPLICATION OF AGENCY SAFEGUARDS UNDER OTHER AGREEMENTS

Article 23

The application of Agency safeguards in Japan under other safeguards agreements with the Agency shall be suspended while this Agreement is in force.[4] If the Government of Japan has received assistance from the Agency for a project, Japan's undertaking in the Project Agreement not to use items which are subject thereto in such a way as to further any military purpose shall continue to apply.

AMENDMENT OF THIS AGREEMENT

Article 24

- (a) The Government of Japan 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 the Government of Japan and the Agency.

[4] In relation to this provision, see documents INFCIRC/85/Mod. 2, INFCIRC/125/Mod. 1 and INFCIRC/170/Mod.2.

- (c) Amendments to this Agreement shall enter into force in the same conditions as entry into force of this Agreement.
- (d) The Director General shall promptly inform all Member States of the Agency of any amendment to this Agreement.

ENTRY INTO FORCE AND DURATION

Article 25

- (a) This Agreement shall enter into force on the date upon which the Agency receives from the Government of Japan written notification that Japan's statutory and constitutional requirements for entry into force have been met. The Director General shall promptly inform all Member States of the Agency of the entry into force of this Agreement.
- (b) This Agreement shall remain in force as long as Japan is a party to the Treaty.

PROTOCOL

Article 26

The Protocol attached to this Agreement shall be an integral part thereof. The term "Agreement" as used in this instrument means the Agreement and the Protocol together.

PART II

INTRODUCTION

Article 27

The purpose of this part of this Agreement is to specify, as required, 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 Agreement is the timely detection of diversion of significant quantities of nuclear material from peaceful nuclear activities to the manufacture of nuclear weapons or of other nuclear explosive devices or for purposes unknown, and deterrence of such diversion by the risk of early detection.

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.

THE NATIONAL SYSTEM

Article 31

Pursuant to Article 3 the Agency, in carrying out its verification activities, shall make full use of the National System.

Article 32

Japan'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. The Government of Japan, in applying the National System, will make use of and, to the extent necessary, make provision for, as appropriate and specified in the Subsidiary Arrangements, 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 59 to 65 and 67 to 69.

STARTING POINT OF SAFEGUARDS

Article 33

Safeguards under this Agreement shall not apply to material in mining or ore processing activities.

Article 34

- (a) When any material containing uranium or thorium which has not reached the stage of the nuclear fuel cycle described in paragraph (c) is directly or indirectly exported to a non-nuclear-weapon State, the Government of Japan shall inform the Agency of its quantity, composition and destination, unless the material is exported for specifically non-nuclear purposes;
- (b) When any material containing uranium or thorium which has not reached the stage of the nuclear fuel cycle described in paragraph (c) is imported, the Government of Japan shall inform the Agency of its quantity and composition, unless the material is imported for specifically non-nuclear purposes; and

- (c) When any nuclear material of a composition and purity suitable for fuel fabrication or for isotopic enrichment leaves the plant or the process stage in which it has been produced, or when such nuclear material, or any other nuclear material produced at a later stage in the nuclear fuel cycle, is imported into Japan, the nuclear material shall become subject to the other safeguards procedures specified in this Agreement.

TERMINATION OF SAFEGUARDS

Article 35

- (a) Safeguards under this Agreement shall terminate on nuclear material under the conditions set forth in Article 11. Where the conditions of that Article are not met, but the Government of Japan considers that the recovery of nuclear material subject to safeguards under this Agreement from residues is not for the time being practicable or desirable, the Government of Japan and the Agency shall consult on the appropriate safeguards measures to be applied.
- (b) Safeguards under this Agreement shall terminate on nuclear material under the conditions set forth in Article 13, provided that the Government of Japan and the Agency agree that such nuclear material is practicably irrecoverable.

EXEMPTIONS FROM SAFEGUARDS

Article 36

At the request of the Government of Japan, the Agency shall exempt nuclear material from safeguards under this Agreement, 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 the Government of Japan, the Agency shall exempt from safeguards under this Agreement nuclear material that would otherwise be subject to safeguards, provided that the total quantity of nuclear material which has been exempted in Japan 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 exempted nuclear material 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

The Government of Japan and the Agency shall make Subsidiary Arrangements which shall 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. The Subsidiary Arrangements may be extended or changed by agreement between the Government of Japan and the Agency without amendment of this Agreement.

Article 40

The Subsidiary Arrangements shall enter into force at the same time as, or as soon as possible after, the entry into force of this Agreement. The Government of Japan and the Agency shall make every effort to achieve their entry into force within ninety days of the entry into force of this Agreement; an extension of that period shall require agreement between the Government of Japan and the Agency. The Government of Japan shall provide the Agency promptly with the information required for completing the Subsidiary Arrangements. Upon the entry into force of this Agreement, the Agency shall have the right to apply the procedures laid down therein in respect of 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

On the basis of the initial report referred to in Article 62, the Agency shall establish a unified inventory of all nuclear material in Japan 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 the Government of Japan at intervals to be agreed.

DESIGN INFORMATION

General provisions

Article 42

Pursuant to Article 8, design information in respect of existing facilities shall be provided to the Agency during the discussion of the Subsidiary Arrangements. The time limits for the provision of design information in respect of the new facilities shall be specified in the Subsidiary Arrangements and such information shall be provided as early as possible before nuclear material is introduced into a new facility.

Article 43

The design information to be provided to the Agency shall include, in respect of each facility, 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 under this Agreement shall also be provided to the Agency in respect of each facility, as specified in the Subsidiary Arrangements. The Government of Japan shall provide the Agency with supplementary information on the health and safety procedures which the Agency shall observe and with which the Agency inspectors shall comply at the facility.

Article 45

The Agency shall be provided with design information in respect of a modification relevant for purposes of safeguards under this Agreement, 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 applied under this Agreement 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 accounting purposes under this Agreement 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 following criteria shall, inter alia, be used:
 - (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 safe-guards 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 accounting purposes under this Agreement when this is deemed consistent with verification requirements; and
 - (iv) A special material balance area may be established at the request of the Government of Japan 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 accounting purposes under this Agreement;
 - (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, as agreed upon between the Government of Japan and the Agency, 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 or of experience in the application of verification procedures, with a view to modifying the action taken pursuant to Article 46.

Verification of design information

Article 48

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

INFORMATION IN RESPECT OF NUCLEAR MATERIAL OUTSIDE FACILITIES

Article 49

The Agency shall be provided with the following information when nuclear material is to be customarily used outside facilities, as applicable:

- (a) A general description of the use of the nuclear material, its geographic location, and the user's name and address for routine business purposes; and
- (b) A general description of the existing and proposed procedures for nuclear material accountancy and control, as specified in the Subsidiary Arrangements.

The Agency shall be informed, on a timely basis, of any change in the information provided to it under this Article.

Article 50

The information provided to the Agency pursuant to Article 49 may be used, to the extent relevant, for the purposes set out in Article 46(b) to (f).

RECORDS SYSTEM

General provisions

Article 51

The Government of Japan shall arrange that records are kept in respect of each material balance area. The records to be kept shall be described in the Subsidiary Arrangements.

Article 52

The Government of Japan shall make arrangements to facilitate the examination of records by Agency inspectors, particularly if the records are not kept in English, French, Russian or Spanish.

Article 53

Records shall be retained for at least five years.

Article 54

Records 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 55

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 56

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 57

For all inventory changes and physical inventories the 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 58

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 59

The Government of Japan shall provide the Agency with reports as detailed in Articles 60 to 65 and 67 to 69 in respect of nuclear material subject to safeguards under this Agreement.

Article 60

Reports shall be made in English, French, Russian or Spanish, except as otherwise specified in the Subsidiary Arrangements.

Article 61

Reports shall be based on the records kept in accordance with Articles 51 to 58 and shall consist, as appropriate, of accounting reports and special reports.

Accounting reports

Article 62

The Agency shall be provided with an initial report on all nuclear material subject to safeguards under this Agreement. The initial report shall be dispatched by the Government of Japan to the Agency within thirty days of the last day of the calendar month in which this Agreement enters into force, and shall reflect the situation as of the last day of that month.

Article 63

The Government of Japan 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 the time limits specified in the Subsidiary Arrangements; 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 the time limits specified in the Subsidiary Arrangements.

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 64

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 58(a); and
- (b) Describing, as specified in the Subsidiary Arrangements, the anticipated operational programme, particularly the taking of a physical inventory.

Article 65

The Government of Japan 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 66

The Agency shall provide the Government of Japan 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 67

Material balance reports shall include the following entries, unless otherwise agreed by the Government of Japan 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 68

The Government of Japan shall make special reports without delay:

- (a) If any unusual incident or circumstances lead the Government of Japan 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 69

If the Agency so requests, the Government of Japan shall provide it with amplifications or clarifications of any report, in so far as relevant for the purpose of safeguards under this Agreement.

INSPECTIONS

General provisions

Article 70

The Agency shall have the right to make inspections as provided for in this Agreement.

Purposes of inspections

Article 71

The Agency may make ad hoc inspections in order to:

- (a) Verify the information contained in the initial report on the nuclear material subject to safeguards under this Agreement and identify and verify changes in the situation which have occurred between the date of the initial report and the date of the entry into force of the Subsidiary Arrangements in respect of a given facility; and
- (b) Identify, and if possible verify the quantity and composition of, nuclear material subject to safeguards under this Agreement in accordance with Articles 93 and 96, before its transfer out of or upon its transfer into Japan.

Article 72

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 73

Subject to the procedures laid down in Article 77, 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 the Government of Japan including explanations from the Government of Japan 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 this Agreement or involves access to information or locations in addition to the access specified in Article 76 for ad hoc and routine inspections, or both.

Scope of inspections

Article 74

For the purposes specified in Articles 71 to 73, the Agency may:

- (a) Examine the records kept pursuant to Articles 51 to 58;
- (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 75

Within the scope of Article 74, 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 the Government of Japan 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 the Government of Japan for the shipping of samples taken for the Agency's use.

Access for inspections

Article 76

- (a) For the purposes specified in Article 71(a) 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 purposes specified in Article 71(b), the Agency inspectors shall have access to any location of which the Agency has been notified in accordance with Articles 92(d)(iii) or 95(d)(iii);
- (c) For the purposes specified in Article 72, the Agency inspectors shall have access only to the strategic points specified in the Subsidiary Arrangements and to the records maintained pursuant to Articles 51 to 58; and
- (d) In the event of the Government of Japan concluding that any unusual circumstances require extended limitations on access by the Agency, the Government of Japan 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 77

In circumstances which may lead to special inspections for the purposes specified in Article 73, the Government of Japan 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 this Agreement; and
- (b) Obtain access, in agreement with the Government of Japan, to information or locations in addition to those specified, in Article 76. Any disagreement concerning the need for additional access shall be resolved in accordance with Articles 21 and 22. In case action by the Government of Japan is essential and urgent, Article 18 shall apply.

Frequency and intensity of routine inspections

Article 78

With the application of optimum timing, the number, intensity and duration of routine inspections shall be kept to the minimum consistent with the effective implementation of the safeguards procedures set forth in this Agreement, and the optimum and most economical use of available inspection resources under this Agreement shall be made.

Article 79

The Agency may carry out one routine inspection per year in respect of facilities and material balance areas outside facilities with a content or annual throughput, whichever is greater, of nuclear material not exceeding five effective kilograms.

Article 80

The number, intensity, duration, timing and mode of routine inspections in respect of facilities 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 $30 \times E$ 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), 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.

The Government of Japan 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 81

Subject to Articles 78 to 80 the criteria to be used for determining the actual number, intensity, duration, timing and mode of routine inspections in respect of any facility 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 the National System, including the extent to which the operators of facilities are functionally independent of the National System; the extent to which the measures specified in Article 32 have been implemented by the Government of Japan; 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 Japan's nuclear fuel cycle, in particular, the number and types of facilities containing nuclear material subject to safeguards under this Agreement, the characteristics of such facilities relevant to safeguards under this Agreement, 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 Japan'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 82

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

Notice of inspections

Article 83

The Agency shall give advance notice to the Government of Japan before arrival of Agency inspectors at facilities or material balance areas outside facilities, as follows:

- (a) For ad hoc inspections pursuant to Article 71(b), at least 24 hours; for those pursuant to Article 71(a) as well as the activities provided for in Article 48, at least one week;
- (b) For special inspections pursuant to Article 73, as promptly as possible after the Government of Japan and the Agency have consulted as provided for in Article 77, it being understood that notification of arrival normally will constitute part of the consultations; and
- (c) For routine inspections pursuant to Article 72, at least 24 hours in respect of the facilities referred to in Article 80(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 Agency inspectors and shall indicate the facilities and the material balance areas outside facilities to be visited and the periods during which they will be visited'. If the Agency inspectors are to arrive from outside Japan, the Agency shall also give advance notice of the place and time of their arrival in Japan.

Article 84

Notwithstanding the provisions of Article 83, the Agency may, as a supplementary measure, carry out without advance notification a portion of the routine inspections pursuant to Article 80 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 the Government of Japan pursuant to Article 64(b). Moreover, whenever practicable, and on the basis of the operational programme, it shall advise the Government of Japan 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 the Government of Japan and for facility operators, bearing in mind the relevant provisions of Articles 44 and 89. Similarly the Government of Japan shall make every effort to facilitate the task of the Agency inspectors.

Designation of Agency inspectors

Article 85

The following procedures shall apply to the designation of Agency inspectors:

- (a) The Director General shall inform the Government of Japan 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 Agency inspector for Japan;
- (b) The Government of Japan 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 the Government of Japan as one of the Agency inspectors for Japan, and shall inform the Government of Japan of such designations; and
- (d) The Director General, acting in response to a request by the Government of Japan, or on his own initiative, shall immediately inform the Government of Japan of the withdrawal of the designation of any official as an Agency inspector for Japan.

However, in respect of Agency inspectors needed for the activities provided for in Article 48 and to carry out ad hoc inspections pursuant to Article 71(a), 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, Agency inspectors for such purposes shall be designated on a temporary basis.

Article 86

The Government of Japan shall grant or renew as quickly as possible appropriate visas, where required, for each Agency inspector designated for Japan.

Conduct and visits of Agency inspectors

Article 87

Agency inspectors, in exercising their functions under Articles 48 and 71 to 75, 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, Agency inspectors shall not operate any facility themselves or direct the staff of a facility to carry out any operation. If Agency inspectors consider that in pursuance of Articles 74 and 75, particular operations in a facility should be carried out by the operator, they shall make a request therefor.

Article 88

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

Article 89

The Government of Japan shall have the right to have Agency inspectors accompanied during their inspections by Japan's inspectors, provided that Agency inspectors shall not thereby be delayed or otherwise impeded in the exercise of their functions.

STATEMENTS ON THE AGENCY'S VERIFICATION ACTIVITIES

Article 90

The Agency shall inform the Government of Japan 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 Japan, in particular, by means of statements in respect of each material balance area, which shall be made as soon as possible after a physical inventory has been taken by the operator and verified by the Agency and a material balance has been struck.

INTERNATIONAL TRANSFERS

General provisions

Article 91

For the purposes of this Agreement, the Government of Japan shall be deemed to have the responsibility for nuclear material subject or required to be subject to safeguards under this Agreement which is transferred internationally:

- (a) In the case of import into Japan, from the time that such responsibility ceases to lie with the exporting State, and no later than the time at which the material reaches its destination; and
- (b) In the case of export out of Japan, up to the time at which the recipient State assumes such responsibility, and no later than the time at which the nuclear material reaches its destination.

The point at which the transfer of responsibility will take place shall be determined in accordance with suitable arrangements to be made by the States concerned. Neither Japan nor any other State shall be deemed to have such responsibility for nuclear material merely by reason of the fact that the nuclear material is in transit on or over its territory, or that it is being transported on a ship under its flag or in its aircraft.

Transfers out of Japan

Article 92

- (a) The Government of Japan shall notify the Agency of any intended transfer out of Japan of nuclear material subject to safeguards under this Agreement:

- (i) If the shipment exceeds one effective kilogram; and
 - (ii) From facilities which normally export significant quantities to the same State in shipments each not exceeding one effective kilogram, if so specified in the Subsidiary Arrangements.
- (b) Such notification shall be given to the Agency after the conclusion of the contractual arrangements leading to the transfer and within the time limits specified in the Subsidiary Arrangements.
- (c) The Government of Japan and the Agency may agree on different procedures for advance notification.
- (d) The notification shall specify:
- (i) The identification and, if possible, the expected quantity and composition of the nuclear material to be transferred, and the material balance area from which it will come;
 - (ii) The State for which the nuclear material is destined;
 - (iii) The dates on and locations at which the nuclear material is to be prepared for shipping;
 - (iv) The approximate dates of dispatch and arrival of the nuclear material; and
 - (v) At what point of the transfer the recipient State will assume responsibility for the nuclear material for the purposes of this Agreement, and the probable date on which that point will be reached.

Article 93

The notification referred to in Article 92 shall be such as to enable the Agency to make, if necessary, an ad hoc inspection to identify, and if possible verify the quantity and composition of, the nuclear material before it is transferred out of Japan and, if the Agency so wishes or the Government of Japan so requests, to affix seals to the nuclear material when it has been prepared for shipping. However, the transfer of the nuclear material shall not be delayed in any way by any action taken or contemplated by the Agency pursuant to such a notification.

Article 94

If the nuclear material will not be subject to Agency safeguards in the recipient State, the Government of Japan shall make arrangements for the Agency to receive, within three months of the time when the recipient State accepts responsibility for the nuclear material from Japan, confirmation by the recipient State of the transfer.

Transfers into Japan

Article 95

- (a) The Government of Japan shall notify the Agency of any expected transfer into Japan of nuclear material required to be subject to safeguards under this Agreement:
- (i) If the shipment exceeds one effective kilogram; and
 - (ii) To facilities to which significant quantities are normally imported from the same State in shipments each not exceeding one effective kilogram, if so specified in the Subsidiary Arrangements.

- (b) The Agency shall be notified as much in advance as possible of the expected arrival of the nuclear material, and in any case within the time limits specified in the Subsidiary Arrangements.
- (c) The Government of Japan and the Agency may agree on different procedures for advance notification.
- (d) The notification shall specify:
 - (i) The identification and, if possible, the expected quantity and composition of the nuclear material;
 - (ii) At what point of the transfer the Government of Japan will assume responsibility for the nuclear material for the purposes of this Agreement, and the probable date on which that point will be reached: and
 - (iii) The expected dates of arrival, the dates on and locations at which the nuclear material is intended to be unpacked.

Article 96

The notification referred to in Article 95 shall be such as to enable the Agency to make, if necessary, an ad hoc inspection to identify, and if possible verify the quantity and composition of, the nuclear material at the time the consignor is unpacked. However, unpacking shall not be delayed by any action taken or contemplated by the Agency pursuant to such a notification.

Special reports

Article 97

The Government of Japan shall make a special report as envisaged in Article 68 if any unusual incident or circumstances lead the Government of Japan to believe that there is or may have been loss of nuclear material, including the occurrence of significant delay, during an international transfer.

DEFINITIONS

Article 98

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 79 and 80, 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 nuclear 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 nuclear 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 80, 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 the Government of Japan.

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 accountancy are made and where containment and surveillance measures are executed.

DONE in Vienna on the 4th day of March 1977 in duplicate in the English language.

For the GOVERNMENT OF JAPAN:

(signed) Yasue Katori

For the INTERNATIONAL ATOMIC ENERGY AGENCY:

(signed) Sigvard Eklund

PROTOCOL

Article 1

This Protocol amplifies certain provisions of the Agreement and, in particular, specifies the conditions and means according to which co-operation in the application of the safeguards provided for under the Agreement shall be implemented in such a way as to avoid unnecessary duplication of the activities of the National System.

Article 2

In the implementation of the Agreement, the Agency shall accord to the Government of Japan treatment with respect to safeguards not less favourable than the treatment it accords to other States or a group of States, provided that the National System achieves and maintains a degree of functional independence and technical effectiveness equivalent to that of such States or group of States.

Article 3

The Government of Japan shall collect the information on facilities and on nuclear material outside facilities to be provided to the Agency under the Agreement on the basis of the agreed indicative questionnaire to be annexed to the Subsidiary Arrangements.

Article 4

The Government of Japan and the Agency shall carry out jointly the examination of design information provided for in Article 46(a) to (f) of the Agreement. The verification of design information provided for in Article 48 of the Agreement shall be carried out by the Agency in co-operation with the Government of Japan.

Article 5

When providing the Agency with the information referred to in Article 3 of this Protocol, the Government of Japan shall also transmit information on the inspection methods which it proposes to use and the full proposals, including estimates of the inspection efforts for the routine inspection activities, for the Attachments to the Subsidiary Arrangements for facilities and material balance areas outside facilities.

Article 6

The preparation of the Attachments to the Subsidiary Arrangements shall be performed together by the Government of Japan and the Agency.

Article 7

The Government of Japan shall collect reports from the operators, keep centralized accounts on the basis of these reports and proceed with the technical and accounting control and analysis of the information received. The Government of Japan shall, on a monthly basis, provide the Agency with the inventory change reports within the time limits specified in Article 63 of the Agreement. The Government of Japan shall also transmit to the Agency material balance reports and physical inventory listings within the time limits specified in Article 63 of the Agreement and in accordance with the frequency of physical inventory taking as specified in the Subsidiary Arrangements.

Article 8

The form and format of reports as agreed between the Government of Japan and the Agency shall be specified in the Subsidiary Arrangements.

Article 9

The routine inspection activities of the Government of Japan and of the Agency, including the inspections referred to in Article 84 of the Agreement, for the purposes of the Agreement, shall be co-ordinated pursuant to the provisions of Articles 10 to 16 of this Protocol and to the Subsidiary Arrangements.

Article 10

Subject to Articles 79 and 80 of the Agreement, in determining the actual number, intensity, duration, timing and mode of the Agency inspections in respect of each facility, account shall be taken of the inspection activities carried out by the Government of Japan pursuant to the provisions of this Protocol.

Article 11

Inspection efforts under the Agreement for each facility shall be determined by the use of the criteria of Article 81 of the Agreement. Such criteria shall be implemented by using the rules and methods to be set forth in the Subsidiary Arrangements, which shall be used for calculation of estimated inspection efforts. These rules and methods shall be reviewed from time to time, pursuant to Article 7 of the Agreement, to take into account new technological developments in the field of safeguards and experience gained.

Article 12

Such inspection efforts, expressed as agreed estimates of the actual inspection efforts to be applied, shall be set out in the Subsidiary Arrangements together with relevant descriptions of verification approaches and scopes of inspection to be carried out by the Government of Japan and by the Agency. These inspection efforts shall constitute, under normal operating conditions and under the conditions set out below, the actual maximum inspection efforts at the facility under the Agreement:

- (a) The continued validity of the information on the National System provided for in Article 32 of the Agreement, as specified in the Subsidiary Arrangements;
- (b) The continued validity of the information provided to the Agency in accordance with Article 3 of this Protocol;
- (c) The continued provision by the Government of Japan of the reports pursuant to Articles 60 and 61, 63 to 65 and 67 to 69 of the Agreement, as specified in the Subsidiary Arrangements;
- (d) The continued application of the co-ordination arrangements for inspections pursuant to Articles 9 to 16 of this Protocol, as specified in the Subsidiary Arrangements; and
- (e) The application by the Government of Japan of its inspection effort and the achievement of its technical objective with respect to the facility, as specified in the Subsidiary Arrangements, pursuant to this Article.

Article 13

- (a) Subject to the conditions of Article 12 of this Protocol and pursuant to Article 89 of the Agreement, co-ordination of inspection activities shall be so arranged that Agency inspections and inspections under the National System shall be carried out simultaneously.

- (b) Subject to the provisions of paragraph (a), whenever the Agency can achieve the purposes of its routine inspections set out in the Agreement, the Agency inspectors shall implement the provisions of Articles 74 and 75 of the Agreement through the observation of the inspection activities carried out by Japan's inspectors, provided, however, that:
- (i) With respect to inspection activities of Agency inspectors to be implemented other than through the observation of the inspection activities carried out by Japan's inspectors, which can be foreseen, these shall be specified in the Subsidiary Arrangements. Examples of such activities shall also be included in the Subsidiary Arrangements; and
 - (ii) In the course of an inspection, Agency inspectors may carry out inspection activities other than through the observation of the inspection activities carried out by Japan's inspectors where they find this to be essential and urgent, if the Agency could not otherwise achieve the purposes of its routine inspections and this was unforeseeable.

Article 14

The general scheduling and planning of the inspections carried out by the Government of Japan under the Agreement shall be established by the Government of Japan in co-operation with the Agency.

Article 15

In order to enable the Agency to decide, based on requirements for statistical sampling, as to its presence at certain of the inspections carried out by the Government of Japan, the Government of Japan shall provide the Agency with an advance statement of the numbers, types and contents of items to be inspected according to the information available to the Government of Japan.

Article 16

The Government of Japan shall transmit to the Agency its working papers for those inspections at which Agency inspectors were present and inspection reports for all Japan's other inspection activities performed under the Agreement.

Article 17

Whenever the Agency can achieve the purposes of its ad hoc inspections set out in the Agreement through observation of Japan's inspection activities, it shall do so.

Article 18

- (a) With a view to reviewing and facilitating the application of the Agreement and of this Protocol, as well as to benefit from new technological developments in the field of safeguards and experience gained, a Joint Committee shall be established, composed of representatives of the Government of Japan and of the Agency.
- (b) The Committee shall meet periodically:
 - (i) To consider questions arising from the implementation of the Agreement and of this Protocol, including agreed estimates of inspection efforts; and
 - (ii) To examine the development of safeguards methods and techniques.

- (c) The Committee shall also review and promote co-operation between the Government of Japan and the Agency with regard to implementation of the results of research and development in the field of safeguards, and make recommendations concerning the effect which the results of research and development should have on the Subsidiary Arrangements.

DONE in Vienna on the 4th day of March 1977 in duplicate in the English language.

For the GOVERNMENT OF JAPAN:

(signed) Yasue Katori

For the INTERNATIONAL ATOMIC ENERGY AGENCY:

(signed) Sigvard Eklund